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THE TWO-POWER STANDARD.

Considerable controversy has arisen in England recently as to whether the two-power naval scheme which has been announced as the policy to be pursued is designed to apply to the United States. When Mr. Asquith, the prime minister, made a statement in the house of commons recently, saying that the government accepted the two-power standard of naval strength to mean a preponderance of 10 per cent more than the combined strength in capital ships of the two next strongest powers, there was some attempt to suggest that the declaration was aimed at the United States and Germany and that therefore the new British naval program would be based on the activity of these two countries and not on that of Germany and France.

The situation is made somewhat clearer when it is understood that of vessels embodying the all-big-gun principle Great Britain has six launched and two ordered, making a total of 14; Germany has four launched and five ordered, a total of nine; France has six ordered and none launched, while the United States has three launched and three ordered. It will be seen from these figures that the United States and France have building an identical number of "capital" ships and therefore it is of no moment whether the British government takes the combined strength of Germany and France or of Germany and the United States as the basis of its two-power standard.

An additional reason for not including the United States may be found in the well-founded anticipation that the French construction of capital ships in the next few years will be on a higher scale than that of the United States. In America it is generally believed that as last year, congress will authorize the laying down of only two capital ships in view of the deficit which is already in view. The president has supported the program of four ships, as was the case 12 months ago, but this is believed to be on the principle sanctioned by the president of putting forward the idea and that Congress will not be likely to accede to it.

On the other side French technical newspapers announce that the new minister of marine in Paris is preparing a program of six new armored ships of the largest type, for which the first credits will be asked largely this year. This is based on the fact that next year Germany will lay down four more capital ships, thus raising her to 13 or more—twice the number in hand in France.

In the circumstances, if the British standard were based on Germany and the United States, it would be lower than the one devised, as in the past, on the activity of Germany and France.

The two-power naval scheme has given great dissatisfaction to the Radican group in England and it is believed that they have been successful in producing a qualification of the premier's policy, inasmuch as at a recent meeting they passed the following resolution:

"That this meeting of signatories to the memorial on expenditure on armaments presented in July last to the prime minister has heard with much satisfaction that his recent answer in regard to the two-power standard did not contemplate or involve any new departure in policy, or the inclusion of any new factor to swell our ship building program; welcomes the information that he will take an early opportunity of making a full statement on the subject; and trusts that he will then make it clear that the government does not intend any departure from the policy that fixes our naval strength by reference not to any combination, but to a reasonable probable combination of powers against us."

It is said that the prime minister has privately approved of this resolution, and that he intends to make a public statement in harmony with the corrected definition of the two-power standard which is contained in it.

The facts in the case are that on Nov. 12, in the house of commons, Mr. Asquith defined the two-power standard accepted by the government to be a preponderance of 10 per cent over the combined strengths in capital ships of the two next strongest powers; however, on Nov. 23, Mr. Asquith declared that his statement early in the year—that the standard which was to be maintained was one which would give Great Britain complete command of the sea against any reasonably possible combination of powers—was identical in meaning and effect with his statement of Nov. 12.

By introducing the words "reasonable, probable combination of two powers," an attempt seems to have been made to qualify the premier's acceptance of the "two next strongest powers."

The Seaford Marine Railway Co., Seaford, Del., has completed its new ship yard and on Jan. 12 made the first test haul on its new marine railway dry dock. The vessel hauled was the schooner J. R. P. Moore, which is undergoing extensive repairs. The railway is of the Crandall type which, with the modern wood working machinery, makes the Seaford plant a capacious one for repairs.

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Lake Vessel Accidents During 1908.

While accidents on the great lakes during 1908 were sufficiently numerous, total losses appear to have been slight. The subtraction from the available tonnage of the lake fleet was insignificant. The only important loss in the ore fleet was the steamer D. M. Clemson, which disappeared on Lake Superior early in December. Twenty-three lives were lost in the wreck of the Clemson. Had it not been for this unfortunate disaster, the loss of life during 1908 would have been very low. It is low as it is, numbering 33 altogether.

Next to the Clemson, the most important losses were the steamer North Star, the Neshoto, Pascal P. Pratt, Chauncey Hurlbut and Peshtigo. Following is a table giving the vessel losses, together with lives lost and vessels upon which they were lost:

VESSELS TOTALLY LOST DURING 1908.

NAME OF VESSEL.	CAUSE.	WHERE LOST.	CARRYING CAPACITY, GROSS TONS.
STEAMERS.			
Clemson, D. M.	Unknown	Lake Superior	7,800
Holiday	Fire	Holland, Mich.	.....
Hurlbut, Chauncey	Sprang a leak	Whitefish Point, Lake Superior	1,250
Neshoto	Stranded	Crisp Point, Lake Superior	2,987
North Star	Collision	Port Sanilac, Lake Huron	3,000
Oregon	Foundered	North Channel	779
Peshtigo	Stranded	Straits of Mackinac	1,000
Pratt, Pascal P.	Fire	Long Point, Lake Erie	2,800
Street, Charles A.	Fire	Lake Huron	725
Wonder (sand str.)	Foundered	Lake Erie	.....
SCHOONERS.			
Belle	Stranded	Big Point Sable, Lake Michigan	104
Berwind	Stranded	Pilot Island, Lake Michigan	269
Blaine, James C.	Stranded	Lake Ontario	555
Houghton	Sprang a leak	Lake St. Clair	332
Law, Lizzie A.	Foundered	Lake Superior	747
Martin, Jessie	Water-logged	Lake Michigan	42
Maxwell, A. C.	Collision	Sault River	469
Baldwin	Turned turtle	Lake Michigan	495
TUGS.			
Alzora (fishing tug)	Fire	Saginaw Bay	43
American Eagle	Fire	Toledo harbor	110
Deer (fishing tug)	Fire	Saginaw Bay	.....
Dowling, Tom	Fire	Ashland, Wis.	36
Fryant, Thomas	Fire	Sault Ste. Marie, Mich.	.....
Hand, George R.	Fire	Ecorse, Mich.	34
Maxwell, Wm. T	Stranded	Lake Huron, Thunder Bay Island	43
McDonald, R.	Fire	Lake Ontario	69

Number of lives lost on the great lakes during the season of 1908 was 33, viz.:

One on barge Baldwin, which turned turtle on Lake Michigan off Twin River Point on Aug. 27.

Twenty-three on steamer D. M. Clemson, which was lost on Lake Superior early in December.

One on passenger steamer Leelanau by boiler explosion on Aug. 17.

Four on steamer Maggie Marshall by steam pipe explosion on Oct. 20.

Two on Lackawanna dock, Buffalo, when steamer John A. McGean caught rigging of a hoisting machine while passing, on Nov. 19.

Two by capsizing of a scow belonging to the Reid Wrecking Co., on Oct. 6.

CHRONOLOGICAL RECORD OF ACCIDENTS.

Jan. 4—Tug George R. Hand, owned by Robert Thompson, Port Huron, Mich.; burned at Ecorse ship yard; total loss.

Jan. 5—Carferry Manistique, owned by Manistique, Marquette & Northern Ry., Manistique, Mich.; struck a rock near breakwater at Manistique; two plates stove in in boiler room; later sank at dock and floated; docked for repairs.

Jan. 9—Str. George C. Howe, owned by Great Lakes & St. Lawrence Transportation Co., Chicago, Ill.; seacock burst near Kingston; sank in shallow water.

Jan. 10—Str. New York, owned by Port Huron & Duluth Steamship Co., Port Huron, Mich.; caught fire at Algonac; after cabins and life boats destroyed and after deck burned; repaired.

March 25—Carferry Marquette & Bessemer No. 2, owned by Marquette & Bessemer Dock & Navigation Co., Conneaut, O.; rammed by carferry M. & B. No. 1, while breaking ice in Lake Erie; slightly injured.

March 25—Steamer Wm. E. Reis, owned by Mitchell & Co., Cleveland, O.; caught fire at Ecorse ship yard; woodwork of galley considerably charred; repaired.

March 30—Barge Lester, owned by Butler Bros. & Huff Co., Detroit, Mich; sank in Detroit river.

April 7—Tug Lorena, owned by Joseph Walter, Sturgeon Bay, Wis.; sank at dock at Sturgeon Bay from unknown cause; raised and repaired.

April 9—Str. Harvey Brown, owned by Northwestern Trans. Co., Detroit, Mich.; seacock opened while she was being loaded at Ashtabula; sank; pumped out and raised.

April 11—Str. City of St. Ignace, owned by D. & C. Navigation Co., Detroit; swung into freighters tied up at Cleveland; several stanchions broken.

April 14—Str. Assinibola, owned by Canadian Pacific Ry. Co., Owen Sound, Ont.; hit by steamer Doric which broke from her moorings at Owen Sound; slightly damaged.

April 18—Str. Robert Wente, owned by Gus Kitzinger, Manistee, Mich.; struck bottom in Manistee harbor; steering gear disabled and crashed into dock, damaging it considerably; several stanchions broken and 100 bbls. salt lost.

April 20—Str. Juno, owned by Haney & Miller, Toronto, Ont.; ran aground at Pelee Island, Lake Erie; pumped out and taken to Toledo for repairs.

April 28—Schr. Carney, owned by Ogdensburg Coal & Towing Co., Ogdensburg, N. Y.; ran on rocks in Alexandria Bay.

April 28—Str. Puritan, owned by Graham & Morton Transportation Co., Chicago; ran on sand bar in Lake Michigan, near Holland; released, uninjured.

April 29—Str. W. H. Gratwick, owned by Mitchell & Co., Cleveland; ran aground in Portage Lake; released, uninjured.

April 29—Tug John Leatham, owned by Leatham & Smith, Sturgeon Bay, Wis.; struck a rock near Green Bay; broke shoe and stern post.

May 1—Str. Oscoda, owned by Edward Hines Lumber Co., Chicago; got line in her wheel and struck a dock at Sturgeon Bay, damaging it considerably.

May 2—Str. S. C. Reynolds, owned by Lake Erie Transportation Co., Toledo, O.; ran aground near Fighting Island, Detroit river.

May 5—Str. Huronic, owned by Northern Navigation Co. of Ontario, Ltd., Collingwood, Ont.; crashed into Duncan's coal dock at Port Huron, doing considerable damage; Huronic not injured.

May 7—Str. Myron, owned by O. W. Blodgett, West Bay City, Mich.; got tow line in wheel while landing at Harbor Beach.

May 7—Schr. R. H. Becker, owned by C. B. Freyberg, Sheboygan, Wis.; became waterlogged on Lake Michigan near Sheboygan and sank; probably total loss.

May 8—Schr. J. B. Newland, owned by C. C. Naleid, Racine, Wis.; hit breakwater at Milwaukee; slightly damaged.

May 9—Str. James H. Hoyt, owned by Provident Steamship Co., Duluth; ran aground near Dunkirk, Lake Erie; released, uninjured.

May 9—Ice crusher Montcalm, owned by Canadian government; collided with steamer Milwaukee; seriously damaged; sank.

May 10—Bge. Moravia, owned by Tonawanda Iron & Steel Co., North Tonawanda, N. Y.; struck bottom in Sault river; hole punctured in starboard quarter; sank.

May 10—Str. Utica, owned by Western Transit Co., Buffalo; ran aground in Lake Michigan; 63 plates damaged; loss estimated at $50,000.

May 11—Str. John Stanton, owned by Hutchinson & Co., Cleveland; ran aground in Portage river; hole in side, four damaged plates; later docked for repairs.

May 11—Str. J. T. Kopp, owned by Pennsylvania Steamship Co., York, Pa.; stranded in Kinnickinnic river at Milwaukee; delayed trains several hours; not injured.

May 12—Str. Topeka, owned by F. W. Smith, Milwaukee, Wis.; stranded on Big Point Sable, Lake Michigan; released, slightly damaged.

May 13—Str. I. W. Stephenson, owned by I. Stephenson, Marinette, Wis.; ran aground in Niagara river; released, after lightering, uninjured.

May 15—Str. Suit, owned by Hill Steamboat Co., Kenosha, Wis.; disabled on Lake Michigan; eight feet of water in hold; towed to port and pumped out.

May 19—Tug Wm. Kennedy, owned by Great Lakes Towing Co., Cleveland; collided with steamer G. Watson French in Cuyahoga river at Cleveland; quadrant and port rail badly damaged; about 10 days to repair her.

May 19—Str. Harvey D. Goulder, owned by Hawgood & Co., Cleveland; crashed into bridge at Lorain, damaging it greatly; hole punched in bulwark plates of steamer.

May 19—Str. Frontenac; ran on rock during heavy fog on Lake Michigan; released after lightering; leaked slightly.

May 19—Str. Sam Mitchell, owned by W. C. Richardson & Co., Cleveland; ran ashore in heavy fog on Lake Superior near Houghton; rudder disabled and hole in stern; temporarily repaired at Ashland.

May 19—Bge. Chickamauga, owned by W. C. Richardson & Co., Cleveland; in tow of steamer Mitchell when she ran ashore on Lake Superior; stern broken off and hole in side above water line.

May 19—Schr. Nelson, owned by Leatham & Smith, Sturgeon Bay, Wis.; ran into a dock in St. Clair river; bowsprit and jibboom broken.

May 22—Str. D. D. Calvin, owned by The Calvin Co., Kingston, Ont.; crashed into gates of lock No. 18 of Welland canal, carry-

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ing three of them away; steamer ran aground; leaked badly.

May 22—Schr. Mary Ludwig, owned by Augusta Johnson, Muskegon, Mich.; stranded on White Fish Point; released, uninjured.

May ..—Str. Mauch Chunk, owned by Lehigh Valley Trans. Co., Buffalo; stranded in Lake Huron near Cheboygan; released, uninjured, after lightering.

May 22—Str. Joshua W. Rhodes, owned by W. H. Becker, Cleveland; ran ashore in heavy fog in Hammond's Bay; released after lightering; 43 damaged plates; three weeks to make repairs.

May 24—Str. Black Rock, owned by R. J. Dunham, Chicago; stuck in drawbridge in Chicago river; released herself, uninjured.

May 31—Tug Elizabeth G., owned by Delos H. Smith, Port Washington, Wis.; struck by steamer Thompson in Sheboygan harbor; side crushed; surrounding property damaged.

May 29—Bge. S. D. Warriner, owned by Calumet Trans. Co., Cleveland; struck bottom in Cuyahoga river at Cleveland, breaking rudder; docked at Cleveland.

June 5—Str. City of Montreal, owned by Montreal-Lake Erie Steamship Co., Ltd., Montreal, Que.; broke rudder chain and ran ashore on Farran's Point; released on June 24; damage estimated at $45,000.

June 8—Tug Tom Dowling, owned by Independent Tug Line, Duluth, Minn.; sank while at dock at Ashland; floated July 31; repaired and placed in commission.

June 8—Fishing tug Deer, owned by W. C. Penoyer, Bay City, Mich.; destroyed by fire in Saginaw Bay.

June 8—Str. Mataafa, owned by Pittsburg Steamship Co., Cleveland; stranded on sand bar in Lake Michigan off Indiana harbor; released, uninjured.

June 11—Canadian steamer Wexford; ran aground in Buffalo harbor; released, uninjured, after lightering 400 tons.

June 13—Str. Wilpen, owned by Shenango Steamship Co., Cleveland; struck Interstate bridge at Duluth; slightly injured.

June 13—Str. Alexis W. Thompson, owned by Valley Steamship Co., Cleveland; stuck in draw of Superior street viaduct at Cleveland; released, uninjured.

June 15—Str. Sligo, owned by A. McInnes, Windsor, Ont.; caught in heavy sea in Lake Erie; donkey boiler roller over; leaked badly.

June 15—Str. George W. Perkins, owned by Pittsburg Steamship Co., Cleveland; struck pier while leaving Conneaut; large hole in port side; leaked badly; docked at Lorain.

June 17—Bge. Peterson, owned by Warde Transportation Co., Chicago; collided with a dredge in St. Clair river; stem broke off below water line and planking, railing and anchor carried away; repaired at Port Huron.

June 17—Dredge No. 8, owned by C. H. Starke Dredge & Dock Co., Milwaukee, Wis.; collided with barge Peterson in St. Clair river; dipper arm and upper works badly damaged; repaired at Port Huron.

June 17—Str. Gilchrist, owned by Gilchrist Transportation Co., Cleveland; dragged bow along Reis coal dock at Sheboygan, doing considerable damage to hoisting rigs.

June 18—Str. Arundell, owned by A. R. Lee, Detroit, Mich.; ran aground in Alexandria Bay; released on 20th, badly damaged; docked for repairs.

June 19—Str. Kearsarge; struck State St. bridge in Chicago harbor; bridge slightly damaged.

June 19—Str. Langell, owned by Comstock & Sinclair, Duluth; struck bottom in Niagara river; broke wheel; docked at Buffalo.

June 20—Str. J. J. Boland, owned by York Transit Co., Buffalo; ran aground at Point Edward; released on 22d, uninjured, after lightering.

June 20—Bge. Atmosphere; ran into steamer City of Mt. Clemens in Bell river, damaging her considerably.

June 20—Str. City of Mt. Clemens, owned by George A. Douglass, Cleveland; hit by barge Atmosphere in Bell river; loss estimated at $1,000.

June 21—Str. Hoover and Mason, owned by G. A. Tomlinson, Duluth; collided with steamer H. L. Shaw at the Sault; slightly damaged; delayed about 24 hours to make repairs.

June 21—Str. Howard L. Shaw, owned by Pittsburg Steamship Co., Cleveland; collided with steamer Hoover and Mason at the Sault; seven stern plates damaged down to bilge; docked at Lorain for repairs, which it took about two weeks' time to complete.

June 22—Str. Cherokee, owned by W. S. Brainard, Toledo, O.; ran aground in Grassy Island, Detroit river; released, uninjured.

June 22—Schr. Chippewa, owned by W. S. Brainard, Toledo, O.; in tow of steamer Cherokee when she stranded on Grassy Island, Detroit river; released, uninjured.

June 22—Bge. Nellie Holland, owned by Tonawanda Iron & Steel Co., North Tonawanda, N. Y.; struck steamer Donaldson which was waiting to be locked through at the Sault; hole 12 x 15 ft. just above water line.

June 22—Str. Donaldson; struck by barge Nellie Holland at the Sault; anchor carried away and damaged on starbord side.

June 23—Str. John Stanton, owned by Pioneer Steamship Co., Cleveland; dropped her anchor while leaving Indiana Harbor.

June 23—Str. John F. Eddy, owned by Tonawanda Iron & Steel Co., North Tonawanda, N. Y.; wheel chains parted in Niagara river.

June ..—Str. Alexis W. Thompson, owned by Valley Steamship Co., Cleveland; stranded on Gull Island reef, Lake Michigan; number of plates damaged; docked at Cleveland.

June 26—Str. E. L. Wallace, owned by Dearborn Transit Co., Detroit, Mich.; lost her anchor in Sandusky harbor.

June 28—Str. Kotcher, owned by Detroit Steamship Co., Detroit, Mich.; steering gear disabled; ran aground in St. Clair river; released, uninjured.

June 29—Str. Warrington; hit obstruction near Breakwater at Cleveland; lost rudder.

June ..—Str. Lehigh, owned by Erie & Western Transportation Co., Buffalo; arrived at Mackinac with broken wheel; towed to Chicago for repairs.

July 1—Str. W. H. Smith, owned by United States Transportation Co., Cleveland; collided with steamer Ellwood at Lorain; two plates damaged; repaired at Lorain.

July 1—Str. I. L. Ellwood, owned by Pittsburg Steamship Co., Cleveland; collided with steamer H. W. Smith at Lorain.

July 3—Str. Philip Minch, owned by Kinsman Transit Co., Cleveland; ran on shoal in St. Clair river; released herself, uninjured.

July 3—Str. Michigan; wheel chains parted; ran aground in St. Clair river.

July 5—Str. Widener, owned by Pittsburg Steamship Co., Cleveland; stranded on South Manitou island, Lake Michigan; tanks No. 7 and 8 punctured; 100 plates taken off; docked at Lorain.

July 5—Str. Nyanza, owned by James McBrier, Erie, Pa.; ran aground on Gray's reef.

July 7—Str. H. P. McIntosh, owned by Gilchrist Transportation Co., Cleveland; collided with steamer M. A. Hanna in St. Clair river; 20 plates and number of frames broken; hole 6 ft. wide and 12 ft. deep on her port side; filled with water and sank; released July 20; docked at Cleveland for repairs.

July 7—Str. M. A. Hanna, owned by Mitchell & Co., Cleveland; collided with steamer H. P. McIntosh in St. Clair river; stern twisted and 20 plates broken; docked at Toledo for repairs.

July 7—Bge. Alex Holley, owned by Pittsburg Steamship Co., Cleveland; ran aground in wind storm on Lake Erie, off Lorain; bottom slightly damaged and dent in bow.

July 7—Str. Charles S. Hebard, owned by Wilson Transit Co., Cleveland; ran ashore on White Fish point, Lake Superior; released herself, uninjured.

July 8—Schr. Acacia, owned by Wm. Simmons, Kingston, Ont.; ran ashore in storm on Bullrock point, Lake Ontario; wreck and cargo later sold by owner for $500; recovered early in September and taken to Kingston for extensive repairs.

July 8—Schr. James G. Blaine, owned by George Hall Coal Co., Ogdensburg, N. Y.; ran ashore in Lake Ontario off Oswego and was pounded to pieces; total loss.

July 9—Str. Columbia; missed her course and ran aground while leaving Sandusky; released, uninjured.

July 11—Str. Tuscarora, owned by U. S. Revenue Cutter Service; ran ashore on Mackinaw Island; released, uninjured.

July 12—Str. Black Rock, owned by R. J. Dunham, Chicago; lost rudder in St. Clair river; repaired at Port Huron.

July 13—Bge. Chieftain, owned by James Davidson, Bay City, Mich.; ran aground in Niagara river, stern badly damaged; released on 15th after lightering.

July 13—Str. O. M. Poe, owned by Pittsburg Steamship Co., Cleveland; stranded in heavy fog at foot of dyke in Sault river; released on 15th after lightering; leaked.

July ..—Schr. Ira Lawson, owned by Harry Larsen, Chicago; stranded in Sturgeon bay; abandoned.

July ..—Str. Orinoco, owned by James Davidson, Bay City, Mich.; disabled on Lake Superior near Duluth; shoe and rudder damaged; towed to Bay City for repairs.

July 14—Str. Mary Horton; carried away two gates from Lock 13 of Welland canal.

July 17—Str. H. W. Williams, owned by Dunkley-Williams Co., South Haven, Mich.; collided with steamer Lucy Simpson on Lake Michigan, six miles east of Chicago; not damaged.

July 17—Tug R. McDonald, owned by Dunham Towing & Wrecking Co., Chicago; burned to water's edge near Sackett's Harbor, Lake Ontario.

July 17—Str. Frontenac, owned by H. C. Burrell, Lorain, O.; caught fire while at dock at Lorain; damaged docks of American Ship Building Co.; steamer raised and converted into a sand barge.

July 17—Schr. Lucy Simpson, owned by Charles J. Sanderson, Milwaukee, Wis.; collided with steamer H. W. Williams on Lake Michigan, off Chicago; bow badly damaged and sails carried away.

July 17—Str. Starrucca, owned by Union Steamboat Line, Buffalo; broke eccentric strap while out in Lake Huron; stopped at Port Huron for repairs.

July 17—Schr. Lillie; struck by steamer Dunelm during a storm in Cuyahoga river at Cleveland; towed to shallow water, where she sank; floated on 19th and docked for repairs.

July 17—Str. Dunelm; struck schooner Lillie in Cuyahoga river at Cleveland; Dunelm not injured.

July 18—Str. Randolph; machinery became disabled in mid-lake on Lake Michigan; towed to Milwaukee, where she was docked for repairs.

July 19—Str. Maricopa, owned by Pittsburg Steamship Co., Cleveland; stranded on shoal in St. Clair river; released herself, uninjured.

July 19—Bge. Bryn Mawr, owned by Pittsburg Steamship Co., Cleveland; in tow of steamer Maricopa when she struck in St. Clair river; struck by current and carried broadside down river, colliding with sunken steamer H. P. McIntosh, damaging her considerably; stern and boiler house of Bryn Mawr badly damaged and plates on side crushed in; towed to Lorain for repairs.

July 20—Fishing tug Alzora, owned by Louis Thibert, Belle River; caught fire in Saginaw bay; total loss.

July 20—Sand scow Junior; machinery became disabled while out in Lake Michigan.

July 19—Str. Colonel, owned by Michigan Steamship Co., Detroit; ran aground in Sandusky bay; released after lightering 100 tons; four bottom plates damaged, as well as frames; docked at Detroit.

July 19—Str. Sachem, owned by Argo Steamship Co., Cleveland; crashed into barge McWilliams in North Channel; not seriously damaged.

July 19—Bge. McWilliams, owned by Hope Transportation Co., Detroit; hit by steamer Sachem in North Channel; mizzen boom damaged on starboard quarter.

July 21—Str. Havana, owned by George B. Taylor, Erie, Pa.; ran aground in Portage river; released, uninjured.

July 21—Str. Charles A. Street, owned by J. B. Lozen, New Baltimore, Mich.; caught fire in Lake Huron; totally destroyed.

July 23—Bge. Twin Sisters, owned by J. C. Gilchrist, Cleveland; broke away from tug Vigilant in Iroquois canal; ran ashore in Galloo Rapids; released Aug. 10 and repaired.

July 24—Bge. J. R. Edwards, owned by H. McMoran, Port Huron, Mich.; caught fire at Port Huron in Wolverine dry dock; damage estimated at $300.

July 24—Str. Ionic, owned by Northern Navigation Co. of Ontario, Ltd., Collingwood, Ont.; rudder braces smashed at Fort William; docked at Duluth for repairs.

July 26—Schr. Isolda Bock, owned by J. J. Olson, Manitowoc, Wis.; hit by steamer Corsican on Lake Superior near Two Harbors; entire jibboom and forward upper bow carried away; towed to port.

July 27—Str. Wm. Rudolph, owned by A. F. Temple, Muskegon, Mich.; blew out her cylinder head on Lake Michigan; towed to Milwaukee dry dock.

July 27—Str. Huron, owned by Star-Cole Line, Detroit, Mich.; hit by scow in Cuyahoga river, Cleveland; two plates cracked; went to ship yard for repairs.

July 28—Scow, owned by Great Lakes Dredge & Dock Co., Cleveland; rock went through her bottom on Lake Erie; sank.

July 29—Str. Daniel B. Meacham, owned by Frontier Steamship Co., North Tonawanda, N. Y.; ran on rock on Passage island, Lake Superior, during heavy fog; released on 31st after lightering 2,000 tons; 40 plates and

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stem damaged; Nos. 1 and 2 tanks leaked; in dry dock at head of the lakes over two weeks.

July 30—Lighter Lorain; sank in river at Lorain; floated Aug. 8; not damaged.

July 30—Str. A. B. Wolvin, owned by Pittsburg Steamship Co., Cleveland; ran aground in fog at Portage entry; released; went on again just after she was released; hole in bow; docked at Duluth.

July 30—Bge. Lyman Casey, owned by James Scott, Port Huron, Mich.; rammed by unknown steamer in Detroit river; large hole in planking on bow.

July 30—Str. E. A. S. Clarke, owned by John Mitchell, Cleveland; steering gear disabled in St. Clair river; went to Marine City for repairs.

July 31—Str. Holland, owned by Graham & Morton Line, Chicago; machinery became disabled on Lake Michigan; crosshead broken; repaired.

July 31—Bge. C. C. Barnes, owned by L. S. Sullivan, Toledo, O.; caught in a wind storm on St. Clair river; sails carried away.

July 31—Str. Rappahannock, owned by James Davidson, Bay City, Mich.; quadrant broke, and she ran aground in St. Clair river; released herself; repaired at Port Huron.

Aug. 1—Str. Scranton, owned by Erie & Western Transportation Co., Buffalo; collided with Standard Oil Tank No. 86 in Portage river; two large holes in port bow and considerable framework forward broken; 15 damaged plates; went to Superior for repairs.

Aug. 1—Standard Oil Tank No. 86, owned by Standard Oil Co.; collided with steamer Scranton in Portage river; port bow stove in, but proceeded on her trip; docked at Cleveland for repairs; number of plates taken off.

Aug. 1—Str. W. H. Wolff, owned by D. Sullivan & Co., Chicago; collided with lightship at Poe's reef, Lake Huron; not injured.

Aug. 1—Lightship at Poe's reef, Lake Huron; hit by steamer W. H. Wolff; bulwarks stove in and small boat carried away.

Aug. 2—Str. Mahoning, owned by Erie & Western Transportation Co., Buffalo; struck by Van Buren St. bridge in Chicago river; forward mast broken.

Aug. 3—Schr. Cora, owned by John Lockland, Menominee, Mich.; caught in storm on Lake Michigan; foremast maintop, mast jibboom and entire forward works wrecked; went to Manitowoc for repairs.

Aug. ..—Str. George W. Perkins, owned by Pittsburg Steamship Co., Cleveland; ran ashore near Two Harbors, Lake Superior; five or six damaged plates on bottom.

Aug. 4—Fire tug Illinois, owned by Chicago fire department; sank in slip in Chicago river while fighting grain elevator fire; tons of brick fell on tug; released; damage estimated at $50,000.

Aug. 4—Str. Wm. A. Paine, owned by Hutchinson & Co., Cleveland; crashed into dock and tore foundation from under a building; two tons of brick fell upon steamer's deck; several hatches badly dented and deck plates damaged.

Aug. 5—Str. Western Star, owned by M. J. Cummings, Oswego, N. Y.; ran aground during heavy gale in Buffalo harbor; released, uninjured.

Aug. 5—Str. Crete, owned by Lackawanna Steamship Co., Cleveland; ran aground in heavy gale in Buffalo harbor; released Aug. 8, uninjured, after lightering 1,500 tons of coal.

Aug. 5—Str. Columbia; ran on rock near Kingston, Ont.

Aug. 7—Str. Alaska, owned by the Erie & Western Transportation Co., Buffalo; smokestack collapsed and rudder became disabled in midlake on Lake Michigan; towed to Chicago; docked for repairs.

Aug. 8—Str. City of London, owned by Chicago Steamship Co., Chicago; stranded in Sturgeon bay; released, uninjured.

Aug. 9—Str. Russell Sage, owned by George C. Bayliss, Bingham, N. Y.; ran aground in Lake Ontario.

Aug. 9—Schr. Rapid City, owned by Charles Goldring, Whitby, Canada; collided with steamer City of Montreal at Toronto; considerably damaged.

Aug. 9—Str. City of Montreal, owned by Montreal & Lake Erie Steamship Co., Ltd., Montreal, Canada; collided with schooner Rapid City at Toronto.

Aug. 10—Str. Iowa, owned by the Goodrich Transit Co., Chicago; struck by steamer Christopher while passing through bridge at Milwaukee; slightly damaged.

Aug. 11—Str. Hawk, owned by United States government; stranded on Lake Michigan; released, uninjured.

Aug. 13—Str. City of New Baltimore, owned by Capt. George A. Boorig, Bay City, Mich.; blown ashore in storm on Point Lookout, Saginaw Bay; released on 18th, upper works badly torn.

Aug. 12—Str. Wahcondah, owned by R. O. & A. B. Mackay, Hamilton, Ont.; ran ashore at Farran's point, Lake Ontario; released and taken to Montreal; not damaged.

Aug. 13—Str. Strathcona, owned by R. O. & A. B. Mackay, Hamilton, Ont.; ran aground at Sarnia, Ont.; released, uninjured.

Aug. 14—Bge. Gawn, owned by M. Sicken, Marine City, Mich.; mast struck by lightning and broken off at Limekiln crossing.

Aug. 15—Bge. Uranus, owned by S. C. McLouth, Marine City, Mich.; sprung a leak off Put-in-Bay, Lake Erie; beached.

Aug. 17—Pass. Str. Leelanau; boiler exploded in Grand Traverse bay; top of engine blown off and pilot house and upper works demolished; one life lost.

Aug. 17—Str. State of New York, owned by Cleveland & Buffalo Transit Co., Cleveland; struck by lightning in Saginaw bay; flag pole and portion of rail torn away.

Aug. 17—Tug Tom Dowling, owned by Independent Tug Line, Duluth, Minn.; caught fire while lying at dock at Ashland; sank; total loss.

Aug. ..—Str. Mariska, owned by Pittsburg Steamship Co., Cleveland; struck a log on Lake Superior, lost her shoe; docked at Cleveland for repairs.

Aug. 19—Bge. Adiramled, owned by W. H. Brown & Co., Chicago; sprung a leak in midlake, Lake Michigan; went to Harbor Springs where she sank in 20 ft. of water.

Aug. 19—Str. D. M. Whitney, owned by J. C. Gilchrist, Cleveland; dropped her anchor near elevator dock at Washburn, Wis.

Aug. 19—Str. Helen C., owned by John Smith, Manistee, Mich.; ran ashore near Chenoygan, Lake Huron; released; stem, part of keel and forefoot damaged; recaulked.

Aug. 20—Str. Neepawah, owned by R. O. & A. B. Mackay, Hamilton, Ont.; ran ashore on Michipicoten island, Lake Superior; towed to yard of Great Lakes Engineering Works for repairs; bottom badly damaged; 56 plates and a number of frames removed; loss estimated at $25,000 or more.

Aug. 20—Tug Seagel, owned by J. Telfer Jr., Blenheim, Canada; steam pipe burst; slightly injured; Detroit river.

Aug. 21—Schr. Jessie Martin, owned by Capt. Charles Christensen, Manitowoc, Wis.; became waterlogged on Lake Michigan; broke in two; abandoned.

Aug. 22—Bge. Annabel Wilson, owned by Holland & Graves, Buffalo; hit by steamer Mohegan in Sturgeon bay; stern crushed in.

Aug. 22—Three scows, owned by Lake Erie Dredging Co., Buffalo; struck by a squall and broke away from tug Lee near Van Buren point, Lake Erie, while on their way to Buffalo; released on 26th and towed to Buffalo.

Aug. 24—Str. Oregon, owned by J. W. Squires, Michigan City, Ind.; ran aground on Diment shoal, North Channel, and then caught fire; part of cargo saved; total loss.

Aug. 25—Str. Legrand S. DeGraff, owned by Weston Transit Co., North Tonawanda, N. Y.; ran aground near Windmill point, Lake Erie; released on 27th after lightering 750 tons; leaked slightly; one plate cracked; docked at Lorain.

Aug. 25—Str. Plow Boy; ran aground at entrance to Portage lake.

Aug. ..—Steel dump scow, owned by Great Lakes Dredge & Dock Co., Cleveland; ran on rock on Sugar island, Detroit river; partly sank.

Aug. 27—Schr. Baldwin, owned by Great Lakes Dredge & Dock Co., Cleveland; turned turtle on Lake Michigan off Twin River point; one member of crew lost.

Aug. 27—Str. J. W. Westcott, owned by Forster Lumber Co., Milwaukee, Wis.; stranded on Drummond's island, North Channel; released on 31st; rudder lost; towed to the Sault; damage estimated at $2,000.

Aug. 29—Str. Iron King, owned by O. G. & D. H. Donaldson, Buffalo, N. Y.; stranded on rock in Detroit river; released, uninjured.

Aug. 30—Str. Rosemount, owned by Montreal Transportation Co., Ltd., Montreal, Que.; stranded in fog on Round island; released, uninjured.

Aug. 30—Pass. Str. Caribou, owned by U. S. & Dominion Transportation Co., Chicago; stranded in fog in Canadian canal at Sault; released, uninjured.

Aug. 31—Bge. Carrington, owned by Pittsburg Steamship Co., Cleveland, O.; steering gear gave way in St. Clair river and she crashed into a dock; wheel chains broke; large hole in bow and both anchors lost; one anchor recovered Sept. 6; towed to Cleveland.

Sept. 1—Pass. Str. Telegram, owned by Dominion Fish Co., Winnipeg, Man.; stranded on Jackson shoal, Georgian bay; passengers and crew taken off.

Sept. 1—Str. Benton, owned by Capt. H. N. Jex, Toledo, O.; unshipped her rudder in River Rouge; docked at Detroit for repairs.

Sept. 2—Tug James P. Donnelly, owned by Elizabeth D. Baker, Buffalo; became disabled on Lake Erie and stopped at Ashtabula for repairs.

Sept. 1—Str. W. B. Kerr, owned by Weston Transit Co., N. Tonawanda, N. Y.; collided with steamer Buffalo at Duluth; taken to Superior ship yard for repairs.

Sept. 1—Str. Buffalo, owned by Western Transit Co., Buffalo; collided with steamer W. B. Kerr at Duluth; pretty badly damaged; stopped at Superior ship yard for repairs before continuing on trip.

Sept. 3—Str. Thomas F. Cole, owned by Pittsburg Steamship Co., Cleveland; grounded owing to low water and heavy wind at Rice Point channel, Duluth; released by tug.

Sept. 3—Str. Missouri, owned by Northern Michigan Transportation Co., Chicago, Ill.; ran aground on Three Mile point, Lake Michigan; released, slightly damaged.

Sept. 4—Schr. Garibaldi, owned by W. Baker, New Baltimore, Mich.; became waterlogged at Sulphur island, Lake Huron.

Sept. 4—Str. Saxonia, owned by G. A. Tomlinson, Duluth, Minn.; lost her wheel off Detour.

Sept. 4—Tug R. H. Hebard, owned by Frank Ronecker, Tonawanda, N. Y.; caught fire while lying at dock at Middleport; badly damaged; repaired at Tonawanda.

Sept. 5—Str. King Edward, owned by Algoma Central Steamship Line, Sault Ste. Marie, Ont.; ran ashore on Charity island, Lake Huron; passengers taken off by a tug; 23 plates damaged; filled with water; released on 13th and taken to Collingwood ship yard for repairs.

Sept. 6—Sand steamer Wonder, owned by Ashtabula Sand & Gravel Co., Ashtabula, O.; ran aground near Ashtabula, Lake Erie; released on 10th and while being towed to dock sank again in 20 ft. of water; total loss.

Sept. 6—Str. Chauncey Hurlbut, owned by Teagan Trans. Co., Detroit, Mich.; sprang leak near Whitefish point, Lake Superior; beached in storm and broke up; total loss.

Sept. 6—Bge. D. K. Clint, owned by Fritz Riebanch, Alpena, Mich.; in tow of steamer Hurlbut when she sprang a leak near Whitefish point, Lake Superior; picked up in waterlogged condition with rigging gone and beached behind Whitefish point; on Sept. 8 towed to Sault Ste. Marie by steamer Tuscarora.

Sept. 7—Str. Hoover and Mason, owned by G. A. Tomlinson, Duluth; disabled and ran aground on Stag island, St. Clair river; released on 9th and towed to Lorain; 13 plates damaged, shoe broken and rudder bent.

Sept. 7—Schr. J. L. Green, owned by George H. Holmes, Alpena, Mich.; struck pier at Harbor Beach; anchor went through her starboard bow; became water-logged.

Sept. 8—Str. Edward Smith, owned by Guy White, Buffalo; wheel became disabled on Lake Erie after she left Buffalo; put back to Buffalo for repairs.

Sept. 9—Str. Philetus Sawyer, owned by South Side Lumber Co., Chicago; collided with steamer Pere Marquette No. 3 in Milwaukee harbor; small hole in port side.

Sept. 9—Str. Pere Marquette No. 3, owned by Michigan Salt Transportation Co., Manistee, Mich.; collided with steamer P. Sawyer in Milwaukee harbor.

Sept. 9—Str. J. J. Albright, owned by Mitchell & Co., Cleveland; struck obstruction at Fort Gratiot light, St. Clair river; hole punched in bottom.

Sept. 9—Str. Robert Wallace, owned by Great Lakes & St. Lawrence Transportation Co., Duluth, Minn.; ran ashore in thick weather at Bois Blanc island, Straits of Mackinac; released after jettisoning about 100 tons.

Sept. 10—Str. Pleasure, owned by Detroit, Belle Isle & Windsor Ferry Co., Detroit, Mich.; hit by steamer D. C. Whitney while lying at dock in Detroit river; several hundred dollars' worth of damage inflicted upon steamer; repaired at Detroit.

Sept. 10—Str. Myron, owned by O. W. Blodgett, West Bay City, Mich.; lost her wheel at Portage entry, Lake Superior; picked up by a tug and towed to Keewenaw bay.

Sept. ..—Str. A. E. Nettleton, owned by Wilkinson Transportation Co., Syracuse, N. Y.; ran on rock just below Canadian lock at the Sault; 20 plates damaged; went to Toledo for repairs.

Sept. 10—Str. Conestoga, owned by Crosby Transportation Co., Milwaukee, Wis.; grounded

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on Little Traverse island, Portage lake; passengers taken off; released on 12th, uninjured.

Sept. 12—Str. F. H. Goodyear, owned by Mitchell & Co., Cleveland; ran aground in heavy smoke on Grassy island, Detroit river; released on 13th, uninjured.

Sept. 12—Str. P. P. Miller, owned by J. E. Ball, Buffalo; ran ashore in heavy smoke on Lake Michigan; released on 13th, uninjured.

Sept. 13—Str. Winnipeg, owned by John J. Boland, Buffalo; ran ashore in Straits of Mackinac; released, uninjured, after lightering 250 tons.

Sept. 13—Str. E. B. Osler, owned by St. Lawrence & Chicago Steam Navigation Co., Ltd., Toronto, Ont.; ran aground at Bar point, Detroit river, in thick smoke; released uninjured.

Sept. 14—Str. Ball Brothers, owned by Globe Steamship Co., Duluth, G. A. Tomlinson, Mngr.; stranded on rock in thick weather off Detour, Lake Huron; released herself on 15th, uninjured.

Sept. 14—Str. Nyack, owned by Crosby Transportation Co., Grand Haven, Mich.; stranded on a sand bar in dense smoke in Muskegon lake; released, uninjured.

Sept. ..—Str. A. A. Carpenter, owned by A. B. Maclaren, Toledo, O.; sprung a leak in Manitowoc breakwater.

Sept. 15—Schr. George B. Owen, owned by Argo Steamship Co., Cleveland; sprang a leak while loading at Cleveland; towed out under breakwater and beached; docked at Cleveland.

Sept. 15—Str. Arthur Hawgood, owned by Neptune Steamship Co., Cleveland; ran aground at Bar point, Detroit river; released after lightering 800 tons.

Sept. 15—Str. Eastern States, owned by D. & C. Line, Detroit; lost her anchor near Southeast shoal, Lake Erie.

Sept. 16—Str. W. G. Pollock, owned by W. H. Becker, Cleveland; collided with steamer North Star at Point Iroquois, Lake Superior, in thick smoke; 20 plates damaged above water line; repaired at Cleveland.

Sept. 16—Str. North Star, owned by Mutual Transit Co., Buffalo; collided with steamer W. G. Pollock in thick smoke at Point Iroquois, Lake Superior; repaired at Superior.

Sept. 16—Str. Amazonas, owned by James Davidson, Bay City, Mich.; stranded on Six Mile point; released, uninjured.

Sept. 16—Str. W. F. Fitch, owned by Franklin Transportation Co., Cleveland; struck obstruction in river at Ashtabula thought to be an anchor; bottom badly damaged; nine plates damaged and a number of frames broken; docked at Cleveland.

Sept. 17—Str. Wm. G. Mather, owned by Cleveland-Cliffs Iron Co., Cleveland; struck anchor lying at bottom of river at Ashtabula; settled on bottom; floated on 18th and taken to Toledo where she was docked for repairs.

Sept. 17—Str. City of Genoa, owned by J. C. Gilchrist, Cleveland; grounded on Poe's reef, Lake Huron; released, uninjured.

Sept. 17—Str. Henry Phipps, owned by Pittsburg Steamship Co., Cleveland; struck pier at South Manitou island, Lake Michigan; hole in No. 7 tank; released herself; docked at Lorain.

Sept. 18—Str. Benton, owned by Adelaide M. Jex, Toledo, O.; ran aground during thick fog at Belle Isle, Detroit river.

Sept. 18—Scow used as mixing scow in work on Michigan Central tunnel in Detroit river; hit by a car ferry and demolished.

Sept. 19—Str. Holliday, owned by George B. Kelley, Chicago; destroyed by fire at Holland, Mich.; cause unknown; loss estimated at $5,000.

Sept. 19—Tug Wm. Maxwell, owned by Huron Fish Co., Alpena, Mich.; ran ashore on Thunder Bay island, Lake Huron; total loss.

Sept. 19—Str. Sonora, owned by G. A. Tomlinson, Duluth, Minn.; ran on rocks near Harbor Beach, Lake Huron; floated on 21st after lightering 1,000 tons; two forward tanks punctured; 48 plates damaged; in dry dock at Cleveland 17 days.

Sept. 18—Schr. Melvin S. Bacon, owned by Abraham King, Marine City, Mich.; hit by steamer W. H. Mack in Cuyahoga river, Cleveland; leaked badly.

Sept. 20—Str. Harvey D. Goulder, owned by Hawgood & Co., Cleveland; ran aground on Fighting island, Detroit river; released herself, uninjured.

Sept. 21—Str. Wawatam, owned by Pittsburg Steamship Co., Cleveland; ran on rocky bottom at Poe's Reef, Lake Huron; released on 22d after lightering about 150 tons; slightly injured.

Sept. 21—Str. J. H. Wade, owned by W. C. Richardson & Co., Cleveland; struck rock near Calumet, Lake Superior; released after lightering part of her cargo.

Sept. 21—Bge. Atmosphere, owned by Marine Contracting Co., Port Huron, Mich.; crushed against Solvay Process Co.'s dock in River Rouge by steamer Republic; bows smashed and large hole in side; beached, pumped out and taken to Port Huron.

Sept. 21—Str. Langell, owned by Comstock & Sinclair, Duluth, Minn.; ran ashore in dense fog on Point Aux Pins, Lake Erie; released after lightering 200,000 ft. of lumber.

Sept. 21—Bge. Goshawk, owned by O. W. Blodgett, West Bay City, Mich.; ran aground in St. Clair river near Sarnia; tow line parted between barge and steamer Zillah, which towed her.

Sept. 22—Str. Fred G. Hartwell, owned by Mutual Steamship Co., Duluth, Minn.; ran aground in dense smoke and fog at Cedar reef, Sault river; released after lightering considerable of her cargo; leaked badly; docked at Toledo.

Sept. 22—Str. W. P. Palmer, owned by Pittsburg Steamship Co., Cleveland; ran aground in fog and smoke at Poverty Island shoal, Lake Michigan; released.

Sept. 22—Str. Arthur H. Hawgood, owned by Neptune Steamship Co., Cleveland; ran ashore in fog on Cathead point, Lake Michigan; out 2 ft.; released on 26th after lightering about 600 tons; not injured.

Sept. 22—Schr. Mary L. Cook, owned by Claus Weberg, Marinette, Wis.; ran ashore at Detour point.

Sept. 23—Str. Mohegan, owned by L. P. Graves, Buffalo, N. Y.; stranded in fog on Charity Island, Saginaw bay; released after lightering part of her cargo; slightly injured.

Sept. 24—Str. Iron King, owned by O. G. & D. H. Donaldson, Buffalo; grounded in fog on Grecian shoal, Lake Erie; released after lightering.

Sept. 24—Str. A. P. Wright, owned by Gilchrist Transportation Co., Cleveland; grounded in fog near Colchester, Lake Erie; released after lightering.

Sept. 24—Tug Nat Stickney, owned by Lake Superior Construction & Dredging Co., Duluth; hawser got in her wheel near Amherstburg, Ont.; removed by a diver.

Sept. 25—Str. Arthur Orr, owned by Canada-Atlantic Transportation Co., Duluth, Minn.; stranded in fog on Packard's Point, Straits of Mackinac; released on Sept. 28 after lightering 50,000 bu. of corn; reloaded lightered cargo; not injured.

Sept ..—St. Yosemite, owned by G. A. Tomlinson, Duluth; lost her anchor in Sault river.

Sept. 26—Str. Ionic, owned by Northern Navigation Co., Collingwood, Ont.; ran hard aground near North Point, Lake Huron; released on Sept. 27 after lightering; bottom slightly damaged.

Sept. 26—Tug Erna, owned by George D. Nau, Green Bay, Wis.; hit by steamer W. C. Richardson at Waukegon, Ill.; eight stanchions broken.

Sept. 26—Str. Topeka, owned by Topeka Co., Milwaukee, Wis.; cylinder head of unloading engine blew out at Traverse City, Mich.; hold of steamer considerably damaged.

Sept. 26—Schr. Amazon, owned by James Corrigan, Cleveland; grounded in thick smoke and fog in breakwater at Buffalo; released after lightering.

Sept. 27—Str. Frontenac, owned by Cleveland-Cliffs Iron Co., Cleveland; ran ashore on Parisian Island, White Fish Bay; forward compartments filled with water; released Oct. 2 after lightering; leaked badly; left Oct. 3 with temporary repairs for Cleveland where she was docked Oct. 10; 38 damaged plates.

Sept. 27—Str. Neshoto, owned by Gilchrist Transportation Co., Cleveland; ran ashore in thick weather on Crisp Point, Lake Superior; pounded to pieces.

Sept. 27—Str. Thomas Lynch, owned by Pittsburg Steamship Co., Cleveland; ran ashore on Cedar Reef, Sault river; about 5 ft. out of water; released herself on Sept. 28, uninjured.

Sept. 27—Str. H. S. Holden, owned by Mitchell & Co., Cleveland; ran aground at Bar Point, Lake Erie; released after lightering 400 tons.

Sept. ..—Str. Pappoose, owned by Alfred H. Clark, Windsor, Ont.; lost her wheel at Bois Blanc Island, Detroit river; taken to Detroit for new wheel.

Sept. ..—Str. Sawyer, owned by Edward Hines Lumber Co., Chicago; grounded in Niagara river; released herself, uninjured.

Sept. 29—Str. Lyman C. Smith, owned by United States Transportation Co., Cleveland; struck west pier in Canadian canal, Sault; hole 3 ft. wide and 20 ft. long in her side; 15 damaged plates; sank in 24 ft. of water; floated on Oct. 3 and taken to Sault temporarily patched up; docked Oct. 11 at Toledo.

Sept. 29—Str. Calumet, owned by Lackawanna Steamship Co., Buffalo; stranded on Stag Island, Detroit river, out 2 ft.; released on Oct. 4 after lightering 1,200 tons; several plates broken.

Sept. 29—Bge. Montezuma, owned by James Davidson, West Bay City, Mich.; struck steel dredge at Limekiln Crossing, Detroit river; not injured.

Sept. 29—Steel dredge; hit by barge Montezuma in Detroit river; three spud anchors broken; leaked badly.

Sept. 29—Dredge Gladiator, owned by M. Sullivan, Buffalo; burned and then sank in 15 ft. of water in Detroit river; raised and docked at Detroit, Oct. 18; loss estimated at from $80,000 to $100,000.

Sept. 29—Str. City of Buffalo, owned by Cleveland & Buffalo Transit Co., Cleveland; broke bucket off her wheel on Lake Eire; went to Buffalo for repairs.

Sept. 29—Str. Panay, owned by E. D. Carter, Erie, Pa.; ran aground on Bar Point, Lake Erie; released, uninjured.

Sept. 29—Str. Philip Minch, owned by Kinsman Transit Co., Cleveland; lost one of her anchors while loading grain at Duluth; recovered it next day.

Sept. 29—Schr. Major Ferry; ran on rocks in heavy storm on North Point, Lake Huron; badly damaged.

Sept. 29—Schr. Ida, owned by C. C. Nelson, Chicago; capsized in storm on Lake Michigan near Frankfort; crew rescued.

Sept. 30—Bge. Paisley, owned by James Davidson, West Bay City, Mich.; broke away from steamer Honduras which towed her, near Harbor Beach, Lake Huron; leaked and yawl washed away; picked up by passing steamer.

Sept. 30—Bge. Baltic, owned by Henry J. Pauly, Duluth, Minn.; broke away from steamer Duncan which towed her, three times, while crossing Lake Huron.

Sept. ..—Str. H. B. Hawgood, owned by Hawgood Transit Co., Cleveland; grounded in Sandusky Bay; bottom damaged; docked at Cleveland.

Oct. 1—Str. W. H. Gilbert, owned by Pittsburg Steamship Co., Cleveland; grounded at head of West Neebish channel; released on Oct. 2, uninjured.

Oct. 1—Bge. I. L. Bell, owned by Pittsburg Steamship Co., Cleveland; grounded at head of West Neebish channel; out 30 in.; released on Oct. 5 after lightering.

Oct. 1—Bge. Ceylon, owned by Calvin Co., Kingston, Ont.; tow line parted, and she ran ashore at Port Colborne, Lake Erie.

Oct. 1—Str. Ralph and consort, owned by Calbick Transportation Co., Chicago; ran ashore near Belleville, Ont.

Oct. 1—Str. John Duncan, owned by J. H. Pauly, Duluth, Minn.; ran ashore in Detroit river; stern damaged; repaired at Detroit.

Oct. 1—Bge. Baltic, owned by H. J. Pauly, Duluth, Minn.; in tow of steamer Duncan and ran into her when she stranded in Detroit river; bow smashed; unloaded at Detroit.

Oct. 1—Str. Plankinton, owned by George B. Taylor, Erie, Pa.; air pump broke on Lake Huron.

Oct. 1—Bge. Matanzas, owned by James Davidson, West Bay City, Mich.; broke away from steamer Rappahannock which towed her in storm on Lake Superior; not injured.

Oct. 2—Str. Joseph S. Morrow, owned by Masaba Steamship Co., Duluth; ran aground at head of West Neebish channel; released on Oct. 6, uninjured, after lightering.

Oct. 2—Str. H. A. Berwind, owned by Mutual Steamship Co., Duluth; struck obstruction in Conneaut Harbor; 15 plates damaged; repaired at Toledo.

Oct. ..—Bge. Golden Age, owned by Richardson & Co., Cleveland; damaged while out in heavy weather on Lake Huron; arrived at Cleveland in leaking condition; towed to Lorain for repairs; recaulked.

Oct. 3—Str. Hall, owned by F. W. Gilchrist, Alpena, Mich.; ran ashore on Black River Reef; released; leaked, but not badly damaged.

Oct. 3—Bge. Angus Smith, owned by Capt. Wm. Trude, Cleveland; damaged by fire at Bay City; loss, $3,000 to $4,000.

Oct. ..—Schr. Naiad; picked up in waterlogged condition on Lake Huron and taken to Port Huron; pumped out at Walkerville and unloaded Oct. 13.

Oct. 4—Str. Ream, owned by Pittsburg Steamship Co., Cleveland; ran aground in heavy fog in St. Clair river; released; docked at Lorain.

Oct. 4—Str. Stewart; ran aground in heavy fog in St. Clair river; released, uninjured.

Oct. 4—Str. Ohl, owned by W. H. Becker, Cleveland; struck obstruction in West Neebish channel; released, uninjured.

Oct. ..—Str. Briton, owned by Pittsburg Steamship Co., Cleveland; struck at Bar Point,

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Lake Erie; bottom damaged; released and temporarily repaired.

Oct. 4—Str. Price McKinney, owned by J. J. Rardon, Chicago; grounded in Buffalo creek, owing to low water.

Oct. 5—Bge. Mowatt, owned by Richard F. Squires, Marine City, Mich.; stranded on Crab Island, Straits of Mackinac.

Oct. 5—Bge. Jenness, owned by O. W. Blodgett, Bay City, Mich.

Oct. 5—Str. Peshtigo, owned by F. B. Chesbrough, Emerson, Mich.; grounded in St. Mary's river abreast of Round Island.

Oct. 5—Str. Pendennis White, owned by Mitchell & Co., Cleveland; accident to air pump on Lake Superior; stopped at Sault for repairs.

Oct. 6—Scow owned by Reid Wrecking Co., Sarnia, Ont.; capsized in White Fish Bay; two men drowned.

Oct. 7—Str. M. E. Elphicke, owned by G. A. Tomlinson, Duluth; ran aground in Buffalo breakwater in fog; released.

Oct. 8—Str. Gilchrist, owned by Gilchrist Transportation Co., Cleveland; stranded at the Dyke, Sault river; released, uninjured.

Oct. 9—Str. Wm. Livingstone, owned by Mutual Steamship Co., Duluth; grounded at entrance to Conneaut Harbor; released, uninjured.

Oct. 10—Str. Wm. H. Averill, owned by Rutland Transit Co., Ogdensburg, N. Y.; crashed into State street bridge at Chicago; bow splintered; bridge out of commission for a short time.

Oct. 12—Sand steamer Junior; hit by Rush street bridge at Chicago; entire upper works carried away.

Oct. 12—Str. Midland Prince, owned by Midland Navigation Co., Ltd., Midland, Ont.; struck obstruction at the Dyke, Sault river; bottom plate punctured and forward compartments filled with water; temporarily repaired.

Oct. 13—Str. John Mitchell, owned by Cornell Steamship Co., Cleveland; grounded owing to low water at entrance to Indiana harbor; released on Oct. 15 after lightering 700 tons.

Oct. 13—Ferry Ariel, owned by John A. Mason, Toronto, Ont.; collided with barge Energy in Detroit river; cabin smashed in on port side above water line.

Oct. 13—Bge. Energy, owned by J. Hackett, Amherstburg, Ont.; collided with ferry steamer Ariel in Detroit river; not seriously damaged.

Oct. ..—Str. Alexis Thompson, owned by W. H. Becker, Cleveland; grounded at entrance to Sheboygan harbor; released, uninjured.

Oct. 14—Str. Mataafa, owned by Pittsburg Steamship Co., Cleveland; collided with steamer Sacramento in Duluth harbor; port bow badly smashed and anchor lost; temporarily repaired before proceeding.

Oct. 14—Str. Sacramento, owned by James Davidson, West Bay City, Mich.; collided with steamer Mataafa in Duluth harbor; hit a little forward of amidships and steered to bank, where she sank; decks above water for entire length; raised and temporarily patched up.

Oct. 14—Str. George H. Russel, owned by Gilchrist Transportation Co., Cleveland; broke outboard shaft at stern post, lost end of shaft and her wheel on Lake Superior, off Manitou Island; picked up by steamer Wm. A. Hawgood and towed to Ashland where she unloaded cargo.

Oct. ..—Bge. McWilliams, owned by Hope Transportation Co., Detroit, Mich.; hit by steamer Lyman C. Smith in Lake St. Clair; considerably damaged.

Oct. ..—Str. Lyman C. Smith, owned by L. C. Smith Transit Co., Cleveland; collided with barge McWilliams in Lake St. Clair; not injured.

Oct. 14—Str. Leland, owned by Alex. Hitchcock, Port Clinton, O.; main steam pipe broke; Detroit river; stopped at Amherstburg for repairs.

Oct. 15—Str. Saxon, owned by Pittsburg Steamship Co., Cleveland; stranded in thick weather on High Island Reef, Straits of Mackinac; released herself, uninjured, after jettisoning about 100 tons of cargo.

Oct. 15—Str. Wexford, owned by W. J. Bassett, Collingwood, Ont.; stranded in thick weather on Round Island, Lake Huron; released, uninjured.

Oct. 16—Str. H. B. Smith, owned by W. A. & A. H. Hawgood, Cleveland; grounded in Lorain river.

Oct. 16—Schr. Golden Age, owned by W. C. Richardson & Co., Cleveland; stranded in heavy smoke at Au Sable, Lake Huron; released, uninjured, after lightering 300 tons of coal cargo.

Oct. 16—Str. John Sherwin, owned by Gilchrist Transportation Co., Cleveland; grounded in river at Lorain; released, uninjured.

Oct. 16—Str. J. N. Jenks, owned by Hawgood & Co., Cleveland; ran aground at Bar Point, Lake Erie; released, uninjured.

Oct. 17—Str. E. B. Osler, owned by St. Lawrence & Chicago Steam Navigation Co., Ltd., Toronto, Ont.; ran ashore in thick smoke on Gravel Island, North channel; released after lightering 700 tons of coal; bottom forward badly damaged; forward compartments filled with water.

Oct. 17—Car ferry No. 2, owned by Ann Arbor Railroad & Steamship line, Toledo, O.; stranded in Manistique harbor.

Oct. 18—Str. Siemens, owned by Pittsburg Steamship Co., Cleveland; stranded in thick smoke on Nine Mile Point; released, uninjured.

Oct. 18—Str. S. M. Clement, owned by Mitchell & Co., Cleveland; grounded in Lake St. Clair; released after lightering 400 tons.

Oct. 17—Tug Alert; ran on rock in Livingstone channel; lost shoe and was otherwise damaged.

Oct. 18—Schr. Selden Marvin, owned by Edward Hines Lumber Co., Chicago; broke away from steamer Edward Hines on Lake Superior during heavy storm; stranded; later picked up by steamer Hines in scuttled condition.

Oct. 20—Str. David W. Rust, owned by L. S. Sullivan, Toledo, O.; badly damaged by fire while lying at Lake Shore docks at Toledo; cause unknown; loss on steamer and cargo about $20,000.

Oct. 20—Str. Maggie Marshall, owned by Louis Sands Salt & Lumber Co., Manistee, Mich.; steam pipe burst, throwing off main valve, off Kenosha, Lake Michigan; four members of crew killed.

Oct. 20—Str. Pahlow, owned by Edward Hines Lumber Co., Chicago; caught in storm on Lake Michigan; lost considerable of her deck load of lumber.

Oct. 20—Bge. Delta, owned by Edward Hines Lumber Co., Chicago; caught in storm on Lake Michigan, in tow of steamer Pahlow; lost her lumber cargo and leaked badly.

Oct. 20—Str. D. M. Clemson, owned by Provident Steamship Co., Duluth; hit lighthouse crib while trying to enter Ashtabula harbor in heavy sea, going broadside on; several plates broken just at water line; temporarily repaired before leaving; lighthouse crib knocked out 4 in.

Oct. 20—Str. George Stephenson, owned by Pittsburg Steamship Co., Cleveland; stranded in smoke and storm on Bois Blanc Island, Straits of Mackinac; No. 2 and 4 tanks and engine room full of water; pumped out and floated Oct. 23; large hole in bottom; temporarily repaired; docked at Toledo Oct. 28; 20 or 25 damaged plates.

Oct. 20—Str. G. Watson French, owned by G. A. Tomlinson, Duluth; grounded in smoke and storm on Hay Point, Mud Lake; out 3 ft.; seacock in forepeak broke; forepeak full of water; released after lightering and pumped out.

Oct. 20—Schr. Lizzie A. Law, owned by Edward Hines Lumber Co., Chicago; broke away from steamer Edward Hines in storm on Lake Superior near Huron Island; crew rescued; pounded to pieces.

Oct. 20—Str. A. G. Brower, owned by United States Transportation Co., Cleveland; ran ashore in storm; released, uninjured.

Oct. 21—Str. R. P. Ranney, owned by M. A. Bradley, Cleveland; grounded at Erie, owing to low water.

Oct. ..—Str. America, owned by Wisconsin Transportation Co., Sheboygan, Wis.; wheel picked up sunken log in Green Bay harbor; all buckets on wheel smashed and rudder bent; damage estimated at $1,500.

Oct. 22—Str. Scranton, owned by Buffalo Transit Co., Buffalo, N. Y.; stranded in thick smoke on Point Isabella, Lake Superior; temporarily repaired and went to Houghton; large hole in bottom below engine; about 30 plates damaged; docked at Superior; repair bill about $15,000.

Oct. 22—Str. Farnk Hecker, owned by Gilchrist Transportation Co., Cleveland; struck obstruction in St. Clair river near Port Huron; released.

Oct. 22—Str. J. J. Sullivan, owned by Superior Steamship Co., Cleveland; stranded inside of Buffalo breakwater in thick smoke and heavy weather; lightered part of her cargo and released on Oct. 24.

Oct. 22—Str. Philip Minch, owned by Kinsman Transit Co., Cleveland; stranded in thick smoke and heavy weather inside of Buffalo breakwater; lightered 40,000 bu. of grain and was released on Oct. 24.

Oct. 22—Str. Canadian; stranded on Canoe Point, near Detour; forepeak and forward compartments full of water; released Oct. 30 after lightering most of cargo; forepeak and Nos. 1 and 2 tanks full of water and large leak under boilers; repaired at Collingwood.

Oct. 22—Str. Francis L. Robbins, owned by W. H. Becker, Cleveland; ran ashore in storm on Grosse Point, Lake St. Clair; released after lightering.

Oct. 23—Str. Marquette; ran on beach near Kenosha, Lake Michigan, in storm.

Oct. 23—Str. Caledonia, owned by John J. Boland, Buffalo; sprang a leak while loading ore at C. & N. W. dock at Escanaba; went to Manitowoc dry dock.

Oct. 24—Str. D. B. Meacham, owned by Frontier Steamship Co., North Tonawanda, N. Y.; stranded in storm on Lake Superior near Houghton; crew taken off by Portage Lake life savers; three compartments full of water; released after three tugs had pulled on her continuously for 20 hours; lightered 2,000 tons; 80 plates and a number of frames damaged; tank top forward pushed up; repair bill estimated at $75,000; docked at Ecorse.

Oct. 24—Str. Peshtigo, owned by F. B. Chesbrough, Emerson, Mich.; stranded in storm on Round Island, Straits of Mackinac; pounded hard in bad weather which prevailed; abandoned as total loss after wreckers worked on her for 10 days.

Oct. 24—Str. City of Genoa, owned by Gilchrist Transportation Co., Cleveland; stranded in storm on McGulpin's Point, Straits of Mackinac; out 18 in. forward; released after lightering 300 tons.

Oct. 24—Str. D. M. Clemson, owned by Provident Steamship Co., Duluth; struck at Point Au Pelee, Lake Superior, in storm; released herself.

Oct. 24—Str. Walter Vail, owned by J. A. Calbick, Chicago; stranded on Round Island, Straits of Mackinac; stranded in storm; released on Oct. 29 after hard pulling; stopped at St. Ignace for repairs.

Oct. 24—Bge. Connolly Bros., owned by Calbick Transportation Co., Chicago; stranded on Round Island, Straits of Mackinac; released Oct. 30 after considerable pulling; patched up at St. Ignace and equipped with a steam pump for her down trip.

Oct. ..—Str. G. R. Crowe; ran ashore in storm at Detour, St. Mary's river; forward compartments full of water; pumped out and released; temorarily repaired at Detour.

Oct. 26—Str. Wm. P. Snyder, owned by Shenango Steamship Co., Cleveland; grounded at Erie; released herself, uninjured.

Oct. 27—Lighthouse tender Amaranth; ran aground at Belle Isle, Detroit river.

Oct. 27—Str. Peters, owned by H. O. Nessen & Co., Manistee, Mich.; collided with steamer Venezuela in Sheboygan harbor; misunderstanding of signals given as cause; slightly damaged.

Oct. 27—Str. Venezuela, owned by James Davidson, West Bay City, Mich.; collided with steamer Peters in Sheboygan harbor; owing to a misunderstanding of signals; $4.000 worth of damage.

Oct. ..—Str. Langell Boys, owned by Mershon, Schuette, Parker & Co., Saginaw, Mich.; stranded on Presque Isle, Lake Huron; released after jettisoning several thousand feet of lumber.

Oct. 26—Str. Fred Mercur, owned by George Hall Coal Co., Ogdensburg, N. Y.; ran ashore in fog near Cape Vincent, Lake Ontario.

Oct. 27—Str. City of New York; ran ashore in Niagara river.

Oct. ..—Str. Odland; ran aground on Mutton Island, Thunder Bay; released by tug Whelan.

Oct. 30—Str. Elba, owned by Lackawanna Steamship Co., Cleveland; stranded on Bar Point, Lake Erie, owing to low water; released, uninjured, after lightering 200 tons.

Oct. 30—Str. Midland King, owned by Midland Navigation Co., Midland, Ont.; ran aground at Detour; released Nov. 4 after lightering part of cargo.

Oct. 30—Str. Sacramento, owned by James Davidson, West Bay City, Mich.; struck obstruction while unloading coal cargo at Duluth and removed temporary patch which had been put on after steamer was in collision in Duluth harbor with steamer Mataafa on Oct. 14; towed into shallow water where she sank; raised; moored at Duluth for winter.

Oct. 31—Str. J. J. McWilliams, owned by Mitchell & Co., Cleveland; stranded in Chicago river owing to low water.

Nov. 1—Str. Muskegon, owned by Buck-Mullen Lumber Co.; stranded on St. Martin's Reef, Green Bay; steam pipes broke; out 3 ft. forward; released after lightering 150,000 ft. of lumber; towed to Escanaba.

Nov. 4—Str. Business, owned by George B. Taylor, Erie, Pa.; lost rudder in heavy weather on Lake Ontario, near Oswego; managed to reach Kingston, where new rudder was fitted.

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Nov. 5—Schr. A. C. Maxwell, owned by W. E. Donely, Saginaw, Mich.; cut in two and sunk with cargo of lumber by steamer R. W. England which struck her when her wheel chains fouled; Sault river.

Nov. 5—Str. Wexford, owned by W. J. Bassett, Collingwood, Ont.; struck south pier in entering Canadian canal at Sault; hole in starboard side 1 ft. wide and 6 ft. long; temporarily repaired at Sault.

Nov. 5—Schr. Oscar Newhouse, owned by John A. Johnson, Manitowoc, Wis.; stranded while tied up at city dock at Waukegan harbor, Ill.; crew obliged to swim ashore; cargo of potatoes, valued at $2,775, lost.

Nov. 6—Tug T. C. Lutz, owned by Dunham Towing & Wrecking Co., Chicago, Ill.; broke down in midlake, Lake Erie, and stopped at Port Colborne for repairs; docked at Buffalo later.

Nov. 5—Str. D. J. Morrell, owned by Cambria Steamship Co., Cleveland; lost anchor on Lake Erie, off Ashtabula; stopped at Ashtabula for new one.

Nov. 6—Str. Troy, owned by Western Transit Co., Buffalo; rammed Omaha dock at Duluth, cutting a hole 6 ft. long into it.

Nov. 7—Str. Owego, owned by Union Steamboat line, Buffalo; pounded hard while out in storm on Lake Erie; lost smokestack and whistle; cargo shifted; stopped at Cleveland, where she received new smokestack and whistle.

Nov. 9—Str. Rosemount, owned by Montreal Transportation Co., Ltd., Montreal, Que.; grounded in Hay Lake; out 2½ ft.; 100,000 bu. of grain cargo lightered; released, uninjured; reloaded lightered cargo.

Nov. 10—Str. J. M. Jenks, owned by W. A. Hawgood, Cleveland; grounded at Michigan street bridge, Milwaukee, owing to low water; draw held open seven hours.

Nov. 11—Str. John C. Pringle, owned by Burns Bros., Detroit, Mich.; stranded in storm on Lake Erie, near Euclid creek; severely pounded before released on Nov. 19; entire upper works carried away; engine and boiler damaged; leaked badly; towed to Detroit for repairs, but was patched up before making the trip.

Nov. 12—Str. James E. Davidson, owned by Inter-Ocean Steamship Co., Duluth; struck on a bar while trying to enter Lorain harbor in storm.

Nov. 12—Str. Maricopa, owned by Pittsburg Steamship Co., Cleveland; hit dock at Canadian Sault; one plate damaged; No. 4 tank leaked; patched up and continued on trip.

Nov. 12—Str. Wm. M. Mills, owned by Weston Transit Co., North Tonawanda, N. Y.; ran aground at Bar Point, Lake Erie, owing to low water.

Nov. 15—Str. F. R. Buell, owned by Tonawanda Barge line, North Tonawanda, N. Y.; stranded in heavy weather on Lake Erie, near Southeast Shoal; released on Nov. 18 after lightering 60,000 ft. of lumber; had a line in her wheel, but was not damaged; went to Tonawanda.

Nov. 15—Schr. A. Stewart, owned by Tonawanda Barge line, North Tonawanda, N. Y.; stranded on Lake Erie near Southeast Shoal, in heavy weather; bad list; entire deck load of lumber lightered; released Nov. 23; towed to Tonawanda, where she was docked.

Nov. 14—Fireboat Grover Cleveland, owned by Buffalo fire department; rammed by steamer Saranac at Buffalo; badly damaged.

Nov. 14—Sand sucker Paul Kruger, owned by Wm. H. Botten, Cleveland; broke away from tug Henry, which was working on wrecked steamer Pringle, near Euclid creek, Lake Erie; ran ashore.

Nov. 16—Str. Thomas Adams, owned by Adams Transportation Co., Toledo; grounded in Lake St. Clair owing to low water.

Nov. 17—Str. Neebing, owned by Canadian North West Steamship Co., Ltd., Port Arthur, Ont.; ran on rocks outside of Goderich harbor; forward tanks filled with water; released on Nov. 17 by a fish tug.

Nov. 17—Schr. Mary Woolson, owned by O. W. Blodgett, Bay City, Mich.; broke away from steamer Charles H. Bradley which towed her on Lake Superior, near Houghton.

Nov. 18—Str. James P. Walsh, owned by Ohio Steamship Co., Cleveland; struck obstruction at Bar Point, Lake Erie, thought to be flukes of steamer Weston.

Nov. 18—Str. Adriatic, owned by Lackawanna Steamship Co., Cleveland; struck obstruction at Bar Point, Lake Erie, thought to be flukes of steamer Weston; forepeak and Nos. 2 and 3 tanks leaked; docked at Ecorse; dozen or more plates removed.

Nov. 18—Poe Reef Lightship No. 62; went adrift in Straits of Mackinac, owing to parting of anchor chain; tug sent after her and replaced in position.

Nov. 19—Str. John A. McGean, owned by Pioneer Steamship Co., Cleveland; bow caught rigging of hoisting machine at Lackawanna steel plant, Buffalo, tearing it down; two men killed; steamer not damaged.

Nov. 19—Str. Pascal P. Pratt, owned by Lake Erie Transportation Co., Cleveland; caught fire near Long Point, Lake Erie, and burned to water's edge; fire started in engine room; loss.
1,800 tons of coal cargo saved; steamer total

Nov. 20—Str. Emerald; collided with sand dredge Houghton in Detroit river, owing to misunderstanding of signals; whole starboard side torn away; badly wrecked; patched and pumped out Nov. 27.

Nov. 20—Sand dredge Houghton; collided with steamer Emerald in Detroit river, owing to misunderstanding of signals; not badly damaged.

Nov. 21—Str. City of Mt. Clemens, owned by George A. Douglas, Cleveland; collided with steamer Neilson in Lake St. Clair; hit on starboard quarter and sank immediately; crew had narrow escape; moved into shoal water.

Nov. 21—Str. Neilson, owned by Pittsburg Steamship Co., Cleveland; collided with steamer City of Mt. Clemens in Lake St. Clair.

Nov. ..—Str. W. H. Wolf, owned by D. Sullivan & Co., Chicago; struck while coming down in Canadian canal, Sault; docked when she arrived at Cleveland.

Nov. 22—Str. D. R. Hanna, owned by Pioneer Steamship Co., Cleveland; stranded at Bar Point, Lake Erie; released after lightering part of cargo.

Nov. 22—Str. Laughlin, owned by Interstate Steamship Co., Duluth; stranded on Point Iroquois, Lake Superior, owing to fact that gas buoy was out; released on Nov. 24 after lightering 800 tons.

Nov. 23—Tug Alert, owned by Grant, Smith & Locker; ran on rock in fog while towing a scow; hit by scow; in trying to release tug, wreckers pulled out tow post and timber heads; later she broke in two and sank in 14 ft. of water; Detroit river, near Limekiln Crossing.

Nov. 23—Str. Midland King, owned by Midland Navigation Co., Midland, Ont.; stranded while entering Canadian canal, Sault; out 3 ft.

Nov. 24—Schr. Berwyn, owned by J. F. Bates & Co., Chicago; broke away from steamer Vail and stranded on Pilot Island, Lake Michigan; pounded to pieces on rocks.

Nov. 25—Sand steamer Protection; struck a rock at Cedar Point, Sandusky Bay; sank in 13 ft. of water.

Nov. 25—Str. North Star, owned by Mutual Transit Co., Buffalo; collided with steamer Northern Queen in heavy fog off Port Sanilac, Lake Huron; sank immediately in 90 ft. of water; struck on starboard bow abreast of pilot house.

Nov. 25—Str. Northern Queen, owned by Mutual Transit Co., Buffalo, N. Y.; collided with steamer North Star in heavy fog off Port Sanilac, Lake Huron; bows badly damaged just at water line; temporarily patched up and left for Superior for repairs; moored at Superior for winter.

Nov. 25—Str. Mohawk, owned by Wm. Hendrickson, Sandusky, O.; ran ashore on flat rock on Gravel Island, Lake Huron, loaded with package freight; in 12 ft. of water forward and 13 ft. aft; shoe, rudder and wheel lost; two after compartments full of water, two middle tanks leaked and water in cargo hold; released on Dec. 6 after lightering 500 tons; holes in two starboard tanks; taken to Detour and then towed to Ecorse where she was docked for repairs.

Nov. ..—Str. Amazonas, owned by James Davidson, West Bay City, Mich.; stranded on Vidal Shoals; released after lightering part of her cargo; not damaged.

Nov. 24—Str. S. R. Kirby, owned by Northwestern Trans. Co., Detroit; ran ashore in heavy weather on Chicanola Reef, Lake Erie; released herself on Nov. 25, uninjured.

Nov. 26—Str. Dunelm; grounded on Lake Ontario near Point Ann; leaked.

Nov. 27—Steam barge Topeka, owned by Topeka Co., Milwaukee, Wis.; grounded on a bar while entering port at Holland, Mich.; released, uninjured.

Nov. 26—Str. Bennington, owned by Rutland Transit Co., Ogdensburg, N. Y.; stranded on rocks near Brockville, Lake Ontario; leaked; released after lightering; went to Ogdensburg for repairs.

Nov. 27—Str. Niagara; grounded while trying to make Merrill & King dock at Duluth.

Nov. 28—Str. Fred G. Hartwell, owned by Mutual Steamship Co., Duluth; broke from her moorings at Ashtabula; spar hit an arm of unloading machine, badly damaging foremast.

Nov. 29—Str. Kongo, owned by H. N. Loud, Au Sable, Mich.; crashed into unknown steamer while leaving Buffalo; several stanchions on port side broken and cabin shoved out of position.

Dec. 1—Str. Bulgaria, owned by Bulgaria Transportation Co., Green Bay, Wis.; arrived at Port Huron in badly damaged condition after rough trip on lakes; repaired at Port Huron.

Dec. 1—Str. Iroquois, lost both anchors while out in heavy weather.

Dec. 1—Dredge Old Glory, owned by M. Sullivan, Buffalo; frame, dipper and dipper handle fell into river; Livingstone channel, Detroit river.

Dec. 1—Str. Alfred Mitchell, owned by Lakeside Steamship Co., Duluth; ran aground owing to low water at Bar Point, Lake Erie; released, uninjured.

Dec. 2—Str. F. L. Robbins, owned by W. H. Becker, Cleveland; stranded owing to low water at Bar Point; floated when water rose next day.

Dec. ..—Str. Lyman C. Smith, owned by United States Transportation Co., Cleveland; stranded owing to low water at Bar Point, Lake Erie; floated when water rose.

Dec. ..—Str. Thomas Shaughnessy; stranded owing to low water at Bar Point, Lake Erie; floated when water rose.

Dec. 2—Str. Tempest No. 2, owned by Grace Harbor Lumber Co., Detroit, Mich.; hit by her barge, the King, which was torn from her moorings at Erie by the steamer Juniata; stern considerably damaged; leaked badly.

Dec. 4—Str. Victory, owned by Interlake Co., Cleveland; steering gear broke in St. Clair river; stopped at Port Huron for repairs.

Dec. 4—Str. Sinaloa, owned by Superior Steamship Co., Duluth, Minn.; ran aground in thick snow storm at Bar Point, Lake Erie; released after lightering 300 tons of coal, uninjured.

Dec. —Str. D. M. Clemson, owned by Provident Steamship Co., Duluth; wreckage of steamer found on Lake Superior after storm; entire crew of 23 lost; cause of disaster unknown, but thought to be a derangement of machinery.

Dec. 6—Str. Eber Ward, owned by Hecla Transportation Co., Bay City, Mich.; crashed into Taylor street bridge in Chicago river; bow badly damaged; bridge put out of commission.

Dec. 6—Str. Davidson; ran aground in heavy snow storm on Bois Blanc Island, Straits of Mackinac.

Dec. ..—Str. John Stanton, owned by Pioneer Steamship Co., Cleveland; ran ashore in heavy weather on Iroquois Island, Lake Superior; No. 1 tank full of water; lightered 35,000 bu. of grain and went to the Sault; leaked very badly; repaired at Lorain.

Dec. ..—Str. Harlem, owned by H. J. Pauly, Milwaukee, Wis.; stranded in heavy weather at Bar Point, Lake Erie; low water; released herself, uninjured.

Dec. 9—Str. Harvey Brown, owned by Northwestern Transportation Co., Detroit; ran aground at Bar Point, Lake Erie; released, uninjured.

Dec. ..—Scow; broke away from tug L. P. Smith on Lake Erie, between Ashtabula and Fairport; lost.

Dec. ..—Schr. Houghton, owned by Wallaceburg Sugar Co.; sprang a leak on Lake St. Clair and sank; total loss.

Dec. ..—Str. Diamond, owned by Charles Duclon, Fish creek, Wis.; picked up in disabled condition off Sheboygan, Lake Michigan, and taken to Sheboygan.

Dec. 11—Schr. Belle, owned by Capt. Dan Ludwig, Benton Harbor, Mich.; tow line parted and drifted on beach near Big Point Au Sable, Lake Michigan; storm; towed by steamer F. W. Fletcher; crew had narrow escape; probably total loss.

Dec. 13—Str. Wissahickon, owned by Anchor line, Buffalo; grounded at entrance to harbor, Erie, Pa., owing to low water; released after several hours' hard pulling by tugs.

Dec. ..—Str. James E. Davidson, owned by Inter-Ocean Steamship Co., Duluth, Minn.; ran ashore in heavy snow storm on rocks at Kettle Point, Lake Huron; forward compartments full of water; Nos. 2 and 3 tanks punctured; released on Dec. 16 after lightering 50,000 bu. of cargo and proceeded to Buffalo to unload; to be repaired at Toledo.

Dec. 13—Tug Yale, owned by Great Lakes Towing Co., Cleveland; turned turtle while

(Continued on page 34).

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THE TRIUMPH OF SCIENCE.

We have been conscious for several years of the fact that wireless messages can be transmitted from one side of the ocean to the other, but it remained for the disaster to the White Star liner Republic to bring the wonder of it acutely to mind. The Lloyd-Italiano liner Florida collided with the Republic 26 miles southeast of the Nantucket lightship early Saturday morning in a fog so dense that objects were not visible at a hand's length. The impact being mortal, wireless messages were instantly sent into the air by the Republic, and these were picked up by the White Star liner Baltic 100 miles away and the French liner Lorraine 200 miles away. The Anchor liner Furnesia also caught the call for help and put about to find the stricken steamer. Meanwhile, the Florida was taking off the passengers from the Republic as fast as she could. Her own condition, however, was serious, and when the Baltic, which had been groping for hours through the fog, feeling her way, reached the scene of disaster, the passengers of the Republic and the Florida both were transferred to the Baltic, numbering altogether 1,650 souls. The steamers lay about a mile apart, and the transfer was made in small boats carrying 10 each. The work occupied the whole night. The sea fortunately was fairly calm. The work, however, was of the most trying character, as the Republic was lost in an impenetrable fog when the rescuers were only a boat's length away. In fact, the Lorraine searched all night long for the Republic, but while she was able to pick up the Republic's submarine bell, she was unable to locate the Republic, though the captain of the Lorraine continually urged the Republic with her wireless to make all the noise she could in order that the Lorraine might follow it. The Lorraine finally abandoned her search when the Baltic sent her a wireless that all the passengers had been transferred. The Lorraine then started to convoy the Florida into port, while the revenue cutters Gresham, Seneca and the Furnesia attempted to haul the Republic into shoal water, the revenue cutters towing and the Furnesia steering. This process continued until the gunwales of the Republic were awash when it was seen that there was no hope of saving her. Lines were cast off, but Capt. Sealby did not leave the Republic until she sank. He was picked up floating on a hatch bar 20 minutes later.

The Republic was built in 1904 by Harland & Wolff and was the most popular and the most elegantly appointed White Star liner in the service from Boston. She was put into the winter Mediterranean trade about two years ago and had just left Boston on Saturday morning for the Mediterranean. Only six lives were lost altogether. These were the occupants of the staterooms which were crushed in by the bow of the Florida. The fact that so terrible a disaster should have been accompanied with so little loss of life is one of the most signal triumphs of science in the annals of history.

PROTECTION FOR SHIPPING ON THE ALASKA COAST.

The United States senate has passed a bill recommending the appropriation of $140,000 for additional lights and aids to navigation along the Alaska coast. It is hoped by every one who is seriously interested in the safety of American shipping that when this bill comes up for consideration in the house of representatives it will be recommended for passage and the appropriation will not be reduced. It should be increased.

The commerce between Puget Sound, the Columbia river and San Francisco and Alaska is not merely of local importance to the Pacific coast. It is a national commerce in which the products of the whole nation and the people of nearly every state participate. It amounts to over $40,000,000 annually. The output of gold alone from Alaska was $18,525,000 in 1908. From Puget Sound over 400 vessels a year clear for Alaska ports. Thousands of passengers make the trip each year. Yet this coast is declared to be the least protected and poorest lighted waterway under the jurisdiction of the United States.

The American coastline from Seattle to the Copper river is over 800 miles in length and consists of a series of straits, natural tide riven canals and open gulfs. Some attempts to provide this immense coast line with suitable lights and buoys have already been made; $140,000 additional is an inadequate sum to continue the work and is the least that should be proided.

Some of the Alaskan waterways are under Canadian jurisdiction. The Canadian shipping in this territory is only a fraction of the American commerce, yet the Canadian waters are vastly better protected and provided with aids to navigation than the American. A navigator can tell at once by the increased number of lights and buoys that he is in Canadian waters. From a standpoint of national pride alone we Americans should make haste to do as well as our neighbor, who has vastly less financial interest in the Alaskan commerce than have we.

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The sum provided in the bill now pending will build a few lighthouses where they are most needed and will provide additional can buoys and gas buoys. In the tidal canals of this coast the gas buoy will be a particularly acceptable aid. It is at once a channel buoy and a beacon; it is relatively inexpensive. It can be maintained in isolated waters with practically no attention. It has been found eminently satisfactory and acceptable on the Atlantic coast and Great Lakes. It is to be hoped that a liberal proportion of the new appriation will be invested in modern gas buoys.

As a nation we have steadfastly refused aid to our merchant marine until it has now dwindled to practically nothing. The least we can do is to provide aids to navigation and protect the remnant of shipping still under the American flag. The bill for the lights and buoys along the Alaska coast should be passed.

DIFFERENTIAL ON FUEL COAL.

The committee appointed by the Lake Carriers' Association to see if the differential which now exists between the price of fuel and cargo coal on lake vessels could not be extinguished, has already submitted the matter to the Interstate Commerce Commission for consideration. The committee consists of President Livingstone, H. S. Wilkinson and G. A. Tomlinson. It was stated in last week's *Review* that the differential was 10 cents a ton. As a matter of fact it is 40 cents a ton. The differential of 10 cents is that which the railways charge the coal shippers for the coal that goes into the steamer's bunkers. It is this feature which is, of course, clearly discrimination in rail rates that the committee has brought to the attention of the Interstate Commerce Commission as a violation of law. The coal shippers charge the steamer 40 cents per ton more for fuel coal than for cargo coal. Ten cents of this is the differential which the shippers pay to the railways. The lake carriers' committee believes that whatever reason may have at one time existed for this added charge, it no longer obtains. It certainly costs the railroad no more to haul fuel coal from the mines than it does cargo coal. All that is done is to cut three cars from the train when it reaches a Lake Erie port and dump them into the fuel bunkers instead of into the cargo bunkers. The shipments of bituminous coal during 1908 were approximately 16,000,000 tons. The average coal cargo for the season was 4,000 tons. Therefore an average of 4,000 cargoes were carried. A vessel of 4,000 tons capacity would consume on a trip from a Lake Erie port to the head of the lakes about 150 tons of fuel. Multiplying the number of cargoes by 150 tons would give a consumption of 600,000 tons of fuel coal. The extra cost of this to vessels during 1908 was $240,000. The Lake Carriers' committee believes that business principles do not justify this extra charge and are determined therefore to eliminate it.

AROUND THE GREAT LAKES.

The steamer A. C. Dinkey, building at Lorain for the Pittsburg Steamship Co., will be launched on Feb. 6.

Mr. J. A. Gilchrist, assistant manager of the Gilchrist Transportation Co., has resigned.

All of the engineers employed on the vessels operated by Capt. John Mitchell have signed contracts for the year 1909.

The steamer Tecumseh burned at her dock at Goderich on Jan. 16, and the hull now lies in 20 ft. of water.

It is reported that contract has been given to the O'Boyle Bros. Construction Co. for the construction of a new dry dock at the Canadian Sault.

The steamers Bennington, Burlington, Averell and Haskell, of the Rutland Transit Co.'s fleet, are laid up at Ogdensburg, N. Y.

The Matthews Steamship Co., Toronto, has ordered in Sunderland, a steamer for its service between Montreal and Fort William. The vessel Cleveland, on Monday next.

The advisory committee having charge of the co-operative insurance plan of lake vessel owners will meet in the office of M. A. Hanna & Co., will be named Mapleton.

The Great Lakes Towing Co. will build two steel tugs to be duplicates of the A. C. Harding during the present year. The company will do the work itself.

Advices from Fort William are to the effect that the American Ship Building Co. will furnish capital to build a big dry dock and ship repair plant at that port. President James C. Wallace and Robert Logan, general manager, of the American Ship Building Co. looked over the ground last fall. The city will dedicate the site and the government will allow its customary bonus.

The Akers emergency steering gear is meeting with great favor and is being installed on four new steamers now building on the great lakes for 1909 delivery.

The steamers Wexford and J. A. McKee are laid up at Collingwood, Ont. They are owned by the Western Steamship Co., of Toronto, and are managed by W. J. Bassett, of Collingwood.

Mr. Frank S. Masten, of the firm of Goulder, Holding & Masten, was operated upon at the Harbor hospital, Detroit, for appendicitis. He is reported to be doing well.

Capt. John Leisk, of Milwaukee, one of the most successful masters on the great lakes, and one of the best liked, died as the result of an operation at a Chicago hospital last Friday. Capt. Leisk sailed the steamer H. H. Rogers for the Pittsburg Steamship Co.

It is reported from Pittsburg that the coal carrying railways in the Pittsburg district are contemplating advancing the rate on coal and coke to Lake Erie ports five cents a ton. A general meeting of the coal operators will be held in Pittsburg on Feb. 2, to protest against the advance.

The Licensed Tugmen's Protective Association, in session at Toledo, elected the following national officers: President, Martin Cole, Duluth; first vice president, T. V. O'Connor, Buffalo; second vice president, Owen McAntee, St. Joseph, Mich.; third vice president, James Donovan, Ashtabula; secretary, H. H. Vroman, Buffalo; treasurer, Peter Gagnon, Two Rivers.

Capt. John Mitchell has given an order to the American Ship Building Co. to modernize the steamers John J. McWilliams and Lagonda. The boilers will be taken off the main deck and placed on the tank top with coal bunkers just forward of the boilers. All the main deck beams and stanchions will be taken out and arch girders substituted. Vessels constructed on the girder system have such great advantage over vessels of the old type of construction at the unloading docks that many owners are figuring upon altering their ships. The cost is not as large as might be thought, as a great deal of the steel taken out can be used over again. In fact the steamer ought to earn in a single season the cost of alteration through better dispatch.

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DEDUCTING WATER BALLAST SPACE.

Senator Frye has introduced in the senate and Mr. Greene, of Massachusetts, in the house, a bill providing for a deduction of hatchways and water ballast space from the gross tonnage of vessels. The bill provides that:

"The cubical contents of the hatchways shall be obtained by multiplying the length and breadth together and the product by the mean depth taken from the top of beam to the under side of the hatch. From the aggregate tonnage of the hatchways there shall be deducted one-half of one per cent of the gross tonnage and the remainder only shall be added to the gross tonnage of the ship exclusive of the tonnage of the hatchways.

"Sec. 2. That said section is further amended by inserting at the end of the fourth paragraph (i) the following words:

"'From the gross tonnage there shall be deducted any other space adapted only for water ballast certified by the collector not to be available for the carriage of cargo, stores, supplies, or fuel.'"

Ship construction has undergone some radical changes during the past ten years and the amendments are merely to conform to modern conditions. For instance, Sir Raylton Dixon & Co. are building in Great Britain a type of turret ship with wing water ballast tanks. The Fore River Shipbuilding Co. are building in this country also ships that carry water ballast in wing tanks in the upper part of the ship in order to increase stability when traveling light. The committee on merchant marine, in recommending the passage of the bill, says:

"The purpose of the bill is to bring the laws of the United States relating to the measurement of vessels into more close accord with the laws of maritime nations generally, and it is in the line of the act of March 2, 1895, to which it is an amendment. Since that time Great Britain, Germany, Norway, and other maritime nations have adopted the rules proposed for the measurement of hatchways and water-ballast spaces consequent on improvements in marine construction.

"The first section of the bill provides a method for the measurement of hatchways. In modern steamers hatch coamings often stand 12 inches or more above the ship's deck, and at times hatch openings are 16 ft. square or even more. Heavy steel beams cross athwartship these hatch openings, and fore and aft are shorter steel beams to sustain the hatch covers. As a result of this modern arrangement, a considerable part of the hatches is not available for carrying cargo. Though properly included in the gross tonnage of the ship, such spaces should be deducted in determining the net tonnage of the ship available for carrying cargo or passengers. The rule proposed for measuring hatchways is the rule now in general use elsewhere.

"The second part of the bill is designed to meet a recent improvement in ship construction. Since 1895 the double bottom of a ship in which water ballast is carried is not included in the tonnage. The whaleback was the earliest type of vessel adapted for carrying bulk cargoes such as coal, ore, or grain in which the hold could be completely filled without trimming by hand. To secure this object the upper corners of each hold, so to speak, were dispensed with. With the increase in the size of this type of vesel in order to secure greater stability when the vessel was without cargo, it was necessary to add water ballast on the upper part of the vessel. Triangular water-ballast tanks were accordingly added to the exterior of the hull. In the construction of the past few years these triangular water-ballast tanks have been closed within the main structure of the hull, thus adding to strength as well as stability. While properly included in the gross tonnage such spaces should not, of course, be included in the net tonnage. The department recommends the passage of the bill."

CANADIAN COASTING REGULATIONS.

The text of the order-in-council passed by the Canadian government on Dec. 17, is as follows:

"Whereas, by an order-in-council dated Jan. 13, 1908, it is provided that certain orders-in-council by which ships and vessels of certain foreign countries had been admitted to the coasting trade of Canada, are repealed, on, from and after Jan. 1, 1909. And whereas applications have been made to allow the ships and vessels of certain foreign countries to participate in such coasting trade to a limited extent and for a temporary period, pending the acquisition of suitable British ships, to which class of vessels under the provisions of the order the coasting trade would on and after the said date be confined; therefore the governor general in council is pleased to order that the said order-in-council of Jan. 13, 1908, shall be and the same is hereby revoked and the following provisions substituted for the provisions therein contained.

"All orders in council admitting ships or vessels of any foreign country to the coasting trade of Canada shall be and the same are hereby revoked on, from and after Jan. 1, 1909; and thereafter such ships and vessels shall be subject to the provisions of Secs. 952 to 957 of the Canadian shipping act, both inclusive; provided that steamships of not less than 1,500 tons gross each, of the following countries, namely, Italy, Germany, The Netherlands, Sweden, Norway, Austro-Hungary, Denmark, Belgium, the Argentine Republic and Japan, shall be admitted to the coasting trade of Canada in the carrying of goods and passengers coastwise between any port in Nova Scotia and any port in Quebec, and vice versa, on the same terms and conditions as are applicable to Canadian vessels, until Dec. 31, 1911."

SHIP YARD WAGES IN THE EAST AND ON THE PACIFIC COAST.

The United Metal Trades Association, Seattle, has compiled a set of comparative statistics showing the wages paid in the ship yards of Pennsylvania and those in California. Blacksmiths' wages are given as 29.12 cents per hour in Pennsylvania and 39.04 cents in California; the average number of hours worked per week are 56.10 in Pennsylvania and 53.78 in California. Boiler makers' wages are 25.15 and 48.06 cents in Pennsylvania and California respectively and the number of hours per week are 56.18 and 54.

Machinists' wages in Pennsylvania yards are 26.20 cents and in California 38.90; the respective number of hours worked per week are 56.17 and 54. Ship carpenters receive 31.29 cents in Pennsylvania and 48.01 cents in California, the respective hours per week being 55.10 and 52.87. Joiners receive 28.69 cents in the eastern state and 46.85 cents on the Pacific coast, while the number of hours per week are 56 in the east and 53.49 in the west. Riggers are paid 20.36 cents in Pennsylvania and 41.20 cents in California; the number of hours per week are 56.21 and 52.13 respectively. Laborers receive 14.43 cents per hour in Pennsylvania and 23.18 cents in California, while their respective hours worked per week are

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58.33 and 53.47. The uniformly higher wages and shorter hours prevailing on the Pacific coast are partially due to the domination of labor unions in that section.

SEA WATER TESTS OF CONCRETE AT THE NAVY YARD, CHARLESTOWN, MASS.

The conditions of the tests to be undertaken by the Aberthaw Construction Co., of Boston, under the supervision of the navy department at the Charlestown navy yard have now been perfected. Mr. Herbert L. Sherman, cement chemist of Boston, will assist. The object of these tests is to determine the effect of sea water upon concrete both as regards climatic conditions and chemical action. The specimens will be built in molds in the sea, properly erected for easy inspection and for photographing, and so marked as to be easily identified. A careful record of the materials and the methods used is to be kept for each specimen. The piers will be 16 in. square and 16 ft. long, so placed that the lower 2 ft. will be permanently immersed in sea water, and that the top will probably never be immersed. There are to be 24 piers. In the first series of specimens a standard average composition Portland cement will be used throughout which shall pass the standard specifications of the American Society of Testing Materials, as required by the navy department. In the making of other specimens Portland cement will be selected for various characteristics; some will be entirely free from iron, other lots will be high in alumina or low in alumina. Some iron ore cement will be used which is practically free from alumina; slag cement will also be employed. Various proportions of cement, sand and stone will be used, some mixed quite dry; others with sufficient water to make the concrete plastic, and still others will be mixed very wet.

Special conditions of mixing will be provided for certain specimens. In one case the mixing will be much better than ordinary commercial mixing, in others sea water will be employed; hydrated lime, Sylvester mortar and clay will also be used.

Another series of specimens will consist of 15 cubes 6 in. on a side of specified composition. One-third of these, after being thoroughly wet, will be immersed in sea water, another third will be supported at about half tide, and the rest will be kept perfectly dry, but exposed to the water. In addition briquettes will be made of the same cement and proportions of mortar as used for the large specimens. These will be held subject to tests at intervals marking a period of years. They will be exposed, in different ways and serve as a basis of tests of strength. All cement will be tested for physical and chemical properties. The same tests will be applied to the stone. The exact nature of the various ingredients such as sea water, hydrated lime, Sylvester mortar and clay will be determined. The specifications go into considerable detail regarding the methods of mixing, building forms, reinforcing, testing, etc.

The results of these tests will certainly be awaited with much interest, and which will be reported from time to time, will certainly place the engineering public under great obligations to the Aberthaw Construction Co. and to Mr. Sherman, who for the sake of their general value are freely giving of their time and experience to the carrying out of these experiments.

LIENS ON VESSELS.

Senator Lodge has introduced in the senate and Mr. Jenkins, of Wisconsin, in the house a bill providing for liens on vessels for repairs, supplies and other necessaries. The bill is of considerable importance to shipping interests and is favored by the American Maritime Law association. Its provisions are as follows:

"That any person furnishing repairs, supplies, or other accessories, including the use of dry dock or marine railway, to a vessel, whether foreign or domestic, upon the order of the owner or owners of such vessel, or of a person by him or them authorized, shall have a maritime lien on the vessel which may be enforced by a proceeding in rem and it shall not be necessary to allege or prove that credit was given to the vessel.

"Sec. 2. That the following persons shall be presumed to have authority from the owner or owners, to procure repairs, supplies, and other necessaries for the vessel: The managing owner, ship's husband, master, or any person to whom the management of the vessel at the port of supply is intrusted. No person tortiously or unlawfully in possession or charge of a vessel shall have authority to bind the vessel.

"Sec. 3. That the officers and agents of a vessel specified in section 2 shall be taken to include such officers and agents when appointed by a charterer, by an owner pro hac vice, or by an agreed purchaser in possession of the vessel, but nothing in this act shall be construed to confer a lien when the materialman knew, or by the exercise of reasonable diligence could have ascertained, that because of the terms of a charter party, agreement for sale of the vessel, or for any other reason, the person ordering the repairs, supplies, or other necessaries was without authority to bind the vessel therefor.

"Sec. 4. That nothing in this act shall be construed to prevent a materialman from waiving his right to a lien at any time by agreement or otherwise, and this act shall not be construed to affect the rules of law now existing: First, in regard to the right to proceed against a vessel for advances; second, in regard to laches in the enforcement of liens on vessels; third, in regard to the priority or rank of liens, and, fourth, in regard to the right to proceed in personam.

"Sec. 5. That this act shall supersede the provisions of all state statutes conferring liens on vessels in so far as the same purpose to create rights of action against vessels for repairs, supplies, and other necessaries.

"Sec. 6. That this act shall take effect upon its passage."

SHIP ALICE A TOTAL WRECK.

The French ship Alice, bound from London to Portland, Ore., with a cargo of 11,200 barrels of cement, went ashore at Green Park, Wash., about 20 miles north of the mouth of the Columbia river, early in the morning of Jan. 15. The vessel and cargo are a total loss. The crew of 24, including Capt. Aubert, reached shore safely. The Alice is a steel ship of 2,509 gross and 2,192 tons net register. She was built in 1901 at Bordeaux, and is owned in Nantes. She is reported as being in very bad shape. The seas are breaking clear over her; her masts are at different angles; she is sinking in the sand and at high water her decks are completely submerged. She will probably be sold as junk for the interests of all concerned.

The Hamilton Steamboat Co., of Hamilton, Ont., at its annual meeting held last month declared a half-yearly dividend of five per cent, making ten per cent for the year. Directors and officers re-elected were as follows: A. E. Jarvis, president; A. G. Nicholls, vice president; C. E. A. Goldman, secretary; W. E. Bishop, general manager; A. Angstrom, A. Bruce and H. B. Whitton, directors.

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ATLANTIC COAST NOTES.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

Navigation in the Delaware river and bay at the close of last week experienced the most serious tie-up due to fog it has encountered in several years. For over two days the river and bay were filled with stalled craft and river craft, and river traffic at Philadelphia was seriously hampered, the ferryboats having numerous trifling mishaps. The fog lifted on Sunday long enough to allow about 20 vessels to work their way to dock.

Secretary Oscar S. Straus, of the department of commerce and labor, has asked for an appropriation to enable the government to purchase and lay acetylene gas light buoys in Ambrose channel, in order that passage to the sea may be illuminated at night. The government has on hand $40,000, but the amount needed for the purpose is in excess of $80,000. An appropriation of $40,000 will make the lighting of the channel possible. Trans-Atlantic steamship companies have frequently urged the government to make the improvement, so that vessels may pass in or out at all times.

The Cunard liner Mauretania sailed from Liverpool on Jan. 23, for New York, after receiving a thorough overhaul extending over two months. In addition to the general overhaul the big Cunarder has had two new propellers fitted in the hope that she will break all records at present held by her sister ship, the Lusitania. The propellers are four tons lighter than those they replaced and three-bladed in place of four-bladed, as formerly. The Mauretania averaged 25½ knots to Queenstown and a late wireless message gave her average speed, when 150 miles west of Fastnet, at 26¾ knots.

Beginning on May 20, the group of lights on each masthead of both Nos. 71 and 72 lightships, on the Diamond shoals, Cape Hatteras, will be changed. One group of lights will be taken down, leaving a group which will show a fixed white light of 12 seconds, with three seconds eclipse. The change in the number of lights in the lightships has been made along the coast, and later all lightships will show but one light. The change is being made to avoid confusion.

Consolidation coal barge, No. 22, from Baltimore for Boston, with 1,500 tons of coal, broke adrift from the tug Savage more than a week ago and has not been heard from. It is not definitely known when the barge broke adrift, as the tow was nearly a mile long and the barge was not missed until the tug came to anchor at Sandy Hook. Tugs which went in search of the missing barge returned to Delaware breakwater on Sunday and reported a fruitless journey. It is feared that the barge, with her crew of seven men, is lost.

The wrecking steamer Rescue, of the Merritt-Chapman Wrecking Co., returned to New York last week from the Bahama islands, after a fruitless attempt to save the British steamship Dahomey, from Sydney, C. B., via Newport News, for Vera Cruz, ashore on the reefs near Nassau, and the British steamship Hesleyside, from St. Michael's for Key West, ashore on Abaco island, Bahamas.

The barge Navahoe, which recently arrived at Philadelphia from London in ballast, will sail with a cargo of naphtha and benzine in bulk which which will be the largest ever shipped from this country. The cargo consists of 2,200,000 gallons of naphtha and 860,000 gallons of benzine, instead of petroleum formerly reported.

The British steamship Canada Cape arrived at Lambert's Point on Saturday with her bunker coal afire. When the fire was extinguished it was found that little damage had been done to the vessel. The fire was discovered at sea while the Canada Cape was bound from Demerara to St. John with a part cargo of sugar, via Norfolk, to load lumber and take on additional bunker coal.

The British steamship Genesee, bound for Philadelphia from Manchester, has been obliged to put into St. Michael's, Azore islands, for fuel. Her coal supply ran short.

The French steamship Neustria, of the Fabre line, before reported missing, has been posted as missing at Lloyd's. The Neustria sailed from New York on Oct. 27, for Marseilles, and has not since been heard of. The Admiral Aube, a French warship sent in search of her by the government, saw no sign of the vessel.

The steamer Howard, which arrived at Boston on Sunday, from Norfolk, reported passing an unknown wreck at the entrance to Vineyard Sound, between Gayhead and Cuttyhunk, Three masts were protruding from the water. It is thought that if the schooner was sunk in collision the crew have been rescued by the more fortunate craft.

Owing to the dense fog which blanketed New York harbor on Saturday, incoming trans-Atlantic liners were held up a matter of one day in the vicinity of the Hook. The French liner La Lorraine, and the Italian liner Giovanni, were the first vessels to make their docks on Sunday, well into the afternoon. Over a dozen big vessels were tied up.

WIRELESS TELEPHONE ON THE LAKES.

Thomas E. Clark, of the Clark Wireless Telegraph Co., has arranged for the installation of his aerials on the Benton-Hall tower, Water street, Cleveland, for his long distance wireless telephone service. He expects to have this new service in operation within a few weeks and well under way by the time navigation opens. He claims to be arranging a service that is guaranteed to communicate over 100 miles of space. Mr. Clark also announces that the wireless telegraph station at the Sault will be in commission by the opening of navigation.

G. L. DOUGLASS & CO.

G. L. Douglass & Co. have opened offices at No. 315 Rockefeller building, Cleveland, as vessel agents and brokers. Mr. W. J. Douglass, formerly assistant manager of the Rutland Transit Co., Ogdensburg, N. Y., will have charge of the Cleveland office. His vessel experience has been extensive, having been previous to his connection with the Rutland Transit Co., superintendent of the Mutual Transit Co. at Buffalo. Mr. G. L. Douglass will remain in Duluth, where he has been established for several years as vessel agent.

The Cleveland & Buffalo Transit Co. will operate three steamers between Cleveland and Buffalo next year. The steamer State of Ohio will leave Cleveland at 3 p. m. every other day, calling at Erie in the evening, and arriving at Buffalo at 5 a. m., eastern time. The steamers City of Buffalo and City of Erie will leave as usual. Since the State of Ohio went ashore on Rattlesnake island two years ago she has been practically rebuilt from the main deck down.

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PACIFIC COAST NOTES.

Office of the MARINE REVIEW,
302 Pioneer Bldg., Seattle, Wash., Jan. 23.

The Northland Steamship Co. has purchased from the American Board of Foreign Missions, Boston, the screw steamer Morning Star, which has been lying idle at San Francisco and Seattle for about two years. The sale was negotiated by James A. Moore, Seattle. It has not yet been decided definitely what run the steamer will be placed on but it is reported that the vessel will ply between Vancouver, Port Townsend, Seattle and Tacoma, carrying freight and passengers and making three trips a week. The Northland Steamship Co., H. C. Bradford, general manager, has a contract with the Canadian Pacific Ry. to carry freight to Puget Sound ports.

Extensive repairs and general overhauling on the Morning Star are being executed by John B. Mitchell, Seattle. The repairs include building a new pilot house and texas, the installation of steam winches, new guards and general minor refitting. No work is being done on the machinery. The Morning Star is 132 ft. long by 30 ft. beam, was built in 1900 and was used for some time in the South Sea islands by the American Board of Foreign Missions.

Repairs approximating $15,000 will be made to the steamer A. G. Lindsay, owned by the Northern Steamship Co., and now lying at Seattle. Two Scotch marine boilers will replace the single fire box boiler. The after cabin will be remodeled so as to accommodate from 12 to 15 passengers. Other slight repairs will be made in order to put the steamer in first class condition. Bids are being received for the work now and the contract will be let in a short time. The A. G. Lindsay is a wooden steam schooner of 1,067 gross tons, 678 net tons, 197 ft. long by 37 ft. beam, built in 1889.

The Commercial Boiler Works, Seattle, is making repairs to the steamer Whatcom, owned by the Puget Sound Navigation Co. A new smoke stack is being built, a new boiler foundation is being constructed and minor boiler repairs are being made.

The United States revenue cutter Thetis will receive her annual overhauling at the Heffernan dry dock at Quartermaster harbor. Damage sustained while cruising in Bering sea and fighting ice last summer will be repaired. Deck work on the job will be done by Hall Bros. Marine Ry. & Shipbuilding Co.

It is reported from Bamfield that the Dominion government's motor lifeboat, which went ashore on Robbers' island, will be a total loss.

Further attempts to save the wrecked steamer Saratoga, which was beached near Ellamar island last March, will be made this spring. Little hope of saving the steamer, however, is held out. She is said to be broken in three places and to be in bad shape.

Steamer Bertha, owned by the Alaska Coast Co., is being repaired by the Heffernan Dry Dock Co., Quartermaster island. Only harbor repairs are being made.

Advices from Japan state that the British steamer Craigvar, which went ashore recently and damaged her No. 1 and 2 holds, has been floated and pronounced seaworthy. It is expected that she will continue her voyage to Manila. She grounded near Hakodate, Japan.

The steamer Chehalis collided with the steamer San Jacinto at Grays harbor, Jan. 19, doing damage to the extent of $1,000. It will be necessary for the San Jacinto to discharge cargo and make repairs. The Chehalis arrived in the harbor late and attempted to reach the Hoquiam Lumber & Shingle Co.'s mill a mile up the river. The night was dark and on her way up the Chehalis ran into the Northern Pacific pier on which a steel bridge is to be built, collided with the marine ways a little further up river, tearing out the piling and finally hit the San Jacinto squarely astern breaking her six mooring lines and causing her to go adrift.

Warm southwest winds that have prevailed for the past week have removed the ice from the Columbia river and navigation is again on a normal basis. During the cold snap the small river steamers were put out of commission but at no time was navigation for the sea-going vessels badly hampered.

Following the announcement that the International Steamship Co. has replaced the steamer Chippewa on the Victoria run, the Canadian Pacific lines have reduced the fare between Seattle and Victoria and Seattle, 65 miles, to 25 cents each way. This indicates that the rate war that has been waged between the American and Canadian companies for the past year is still as bitter as ever with little prospect of a settlement of the difficulty.

The German steamer Ella has arrived from Manzanillo, Mexico. She is the first vessel in the new German line which will establish regular steamship and rail service between the north Pacific coast and the City of Mexico. The Ella is scheduled to leave here on her first voyage south about Feb. 4. The agents for the line are Jebson & Ostrander, Seattle.

STEAM SCHOONER SIBYL MARSTON A TOTAL WRECK.

The steam schooner Sibyl Marston, Capt. Charles Schillinsky, which left Grays harbor Jan. 7 for Redondo, with 1,100,000 feet of lumber, went ashore about a mile south of Surf, Cal., near midnight, Jan. 12, and is now a total wreck. Two firemen, John McCarty and Richard O'Neil, were drowned. The wreck was caused by mistaking the lights in the railroad station at Surf for the lighthouse at Point Argello. The ship struck a rock and stove a large hole amidships. It was dark and stormy when the vessel struck; the crew passed a night of trying hardship on the vessel and were finally rescued Jan. 13.

The vessel is owned by Escher & Minor, of San Francisco, and is valued at $138,000. Part of the cargo of lumber may be saved. The Sibyl Marston was built by Boole's shipyard, Oakland, Cal., in 1907, and was one of the finest lumber carriers on the coast. She is 214 ft. long, 42 ft. beam, 16½ ft. deep and has a gross tonnage of 1,073 and net tonnage of 647.

The Moore & Scott Iron Works, San Francisco, Cal., has secured the contract for repairing the Norwegian steamer Henrik Ibsen, at their bid of $7,200, which was $1,150 lower than that of the Union Iron Works and $3,235 lower than that of the Risdon Iron & Locomotive Works, both of San Francisco. The vessel requires dry docking in order to renew several of her shell plates. The contract calls for the completion of the work in 14 days.

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Report to the Chicago Harbor Commission on Obstacles to Chicago's Water Shipping Development.

Among the many interesting and varied opinions concerning Chicago's shipping problem few present more information than does the report of George C. Sikes to the Chicago harbor commission on "Obstacles to Chicago's Water Shipping Development."

Mr. Sikes says in part:

"The wonder is, not that the volume of shipping business in the Chicago harbor, as distinguished from the Calumet harbor, has fallen off, but rather that it has not declined more. The persistence of traffic under the discouraging conditions that exist indicates a desire on the part of shippers to make use of water transportation. This desire is further indicated by the tendency of mercantile concerns to seek locations on the river, and by the recent development of facilities for lighterage service in the Chicago harbor.

"The general attitude of the Chicago authorities and public toward water transportation has been one of indifference. Shipping has been allowed to look out for itself, for the most part. Obstacles to development have been permitted to exist long after their ruinous effect had become evident. The tunnels were an injury to navigation for years before they were removed. Center pier bridges still exist as barriers to water commerce. Most of those already taken out to give way to bridges of the bascule type were removed by the sanitary district board as an incident in the work of securing the necessary flow of water. Such river widening and deepening as has taken place or is planned aside from that done by the federal government, has likewise been carried out by the sanitary district as an incident to the main purpose of that body, which is sanitation. The sanitary district is without lawful authority to spend money for the purpose of promoting navigation, and the city government has expended almost nothing in recent years in furtherance of this object. The city is indeed building a very few new bridges. It has brought about, after many years of agitation, the lowering by the street car companies of the LaSalle, Washington and Van Buren street tunnels, which were very serious obstacles to navigation and responsible for driving much water business away from Chicago. The sanitary district has substituted bascule for center pier bridges at twelve points, as follows: State, Dearborn, Randolph, Harrison, Taylor, Eighteenth, Canal, Twenty-second, Main and Loomis streets, Ashland avenue, and Chicago Terminal Transfer railroad bridge. It is also planning to take out the center pier structure at Twelfth street. It has projected and partially executed a plan for making the south branch of the Chicago river 200 ft. wide from Lake street to the point at Robey street where it connects with the sanitary district channel. The federal government has built turning basins and is now engaged in deepening parts of the river not comprehended within the scope of the sanitary district's work.

"The aforementioned improvements, however, in no sense suffice to meet Chicago's need for better water terminal facilities. While there is some agitation for betterment on the part of citizens' organizations, the creation of the harbor commission is the first serious recognition of the need for an official program for comprehensive water terminal improvement. * * *

THE PRESENT AN OPPORTUNE TIME.

"The present seems an especially opportune time for the inauguration of a successful movement for securing adequate water terminal facilities for Chicago. The procedure is to outline a comprehensive harbor policy that shall provide for future as well as present needs, and take account of other related public improvements that are up for consideration. The people at large must then be familiarized with the main features of the program and led to understand that the problem is one having important public aspects; that it is not primarily a matter affecting a few private interests."

The remainder of the report deals successively with such phases of the situation as the passenger boat business, bridge hours, the lake freight business, waterways and terminals, suggestions for improvement, railroad control over lake transportation, and lack of vessel ownership in Chicago, each of which is shown to have an important bearing on the improvement problem.

THE PASSENGER BOAT BUSINESS.

The passenger boat business is first chosen by Mr. Sikes, not because it is more important than the lake freight business, but because it can be made to demonstrate graphically how little encouragement the city gives lake traffic in general. Lack of dock space, inefficient and inconvenient street car connections, necessity for huge towing bills, and the restrictions imposed by "bridge hours"—during which periods no vessels may pass—are all given deserved attention, and the conclusion seems to be that the passenger boat men would be in favor of the construction of piers on the lake front north of the mouth of the river, for the use of the passenger steamboat lines. This project is given attention at some length later in the report.

BRIDGE HOURS.

In dealing with this phase of Chicago river navigation the report says:

"The bridge hours are a great nuisance to the navigation interests, both passenger and freight. The city ordinance forbids the swinging of bridges for two hours in the morning and two hours in the evening. The morning hours for closed bridges are from 6:30 to 8:30; the evening hours from 5 to 7. During these hours boats have to lie by, wherever they may be.

"It may be a sound principle that people should have the right of way over freight and that the bridges should be closed to freight boats during rush hours in order to facilitate the movement of human beings over the bridges on their way to and from their homes. But it would seem that a passenger on a boat has as good a right to the common highway at any time as the citizen crossing a bridge on foot or in a street car. The navigable channel is as much a part of the common highway as the street or bridge. There would seem to be no sound reason why 3,000 or 4,000 passengers on a boat should be kept away from their dock landing for possibly two hours because turning a bridge for two or three minutes would cause delay for that period of time to perhaps a smaller number of persons than the boat carries. During the past summer a Graham & Morton boat loaded with passengers reached the Rush street bridge just after 5 o'clock. She was obliged to wait in the harbor with her impatient passengers ntil 7 o'clock, when turning one bridge for a very few minutes would have allowed her to land.

"The passenger boats coming into the

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harbor just after the close of bridge hours are likely to encounter freight boats going out. This causes confusion and delay for both, which would be avoided if the passenger boats were not required to observe bridge hours, and could enter the harbor in advance of the time that the freighters may pass out through the bridges.

"It would seem to be a reasonable proposition to ask that bridge hours be done away with for passenger boats, at least from the mouth of the harbor to Wells street. * * *

"The vessel interests generally, freight as well as passenger, think they are entitled to a modification of the bridge hours. They contend that doing away with bridge hours altogether would inconvenience the bridge-using public much less than is popularly supposed. It would seem that the subject should at least be taken up for careful consideration by the council committee on harbors, wharves and bridges, and all interests given a hearing.

DIFFICULTIES THAT BOATS ENCOUNTER.

"The freight boats encounter a multitude of difficulties in attempting to do business in the Chicago harbor. Their troubles are greater in one respect than those of the passenger boats in that they are obliged to go much further up the river to receive and unload cargoes. In the first place, the largest boats on the lakes cannot enter the Chicago river at all. Those that do get in are beset by the difficulties of a narrow and tortuous channel that increase the liability to damage and consequently raise the insurance rate. The current in the south branch is the cause of very much complaint and is said to constitute the chief basis for the higher rate on coal. Boats regularly charge 10 cents a ton more for carrying hard coal from Buffalo to points on the south branch of the Chicago river than they do for cargoes from Buffalo to Milwaukee or to South Chicago. An increase of 10 cents a ton means an addition of about 25 per cent to the water rate from Buffalo. Vessel managers generally have an aversion to entering the Chicago river, because of the difficulties encountered, and will go to competing ports in preference if cargoes are to be had in them on as favorable terms. Bridges and bridge hours and tug bills are more serious burdens to navigation in the Chicago harbor than in any other lake port. Mr. Johnson, Chicago agent of the Anchor line, testified before the commission that the towing bills chargeable to a vessel of his line from the time of entering to the time of leaving the harbor was likely to be $250. He cited one instance where the expense for towing was $320. The time consumed is even a more important consideration. In Duluth vessels can load and unload quickly and it is uncommon for a steamer to require the use of a tug in that port. The package freight boats find the necessity of moving about so much within the Chicago harbor in order to receive and discharge their cargoes objectionable. There are still not enough turning basins. It is difficult to secure satisfactory dock facilities at prices within reason from the boat point of view. The package freighters suffer especially from the inadequacy of warehouse facilities. In Chicago, where a boat takes goods from a railroad, it pays for unloading the car, a usage that prevails in no other port on the lakes. This charge amounts to about 14 cents a ton. While the rate to the shipper is the same from one port to another, it will be seen that the boat line has an object in diverting traffic if it can to a port where it does not have to meet this charge.

RAILROAD TRAFFIC MANAGERS.

"The railroad traffic managers do not undertake to defend this usage. They merely treat its existence as a fact that has developed out of past conditions. It would seem, therefore, that organized efforts on the part of the lake lines to put an end to it might be successful.

INTERESTING PROJECT FOR WAREHOUSE FACILITIES.

"An interesting project for furnishing warehouse facilities and better connections between lake and rail lines is that of the Chicago River & Indiana Railroad Co. This company, which operates a switching line, has erected during the summer of 1908 a warehouse 800 ft. long by 100 ft. wide on land adjoining the Santa Fe slip, near the point where the river joins the sanitary district canal. It is the idea to have this boat landing the meeting place for lake and rail lines. The Chicago River & Indiana Railroad Co. derives its benefit from the project out of the $3 a car switching charge for moving cars to and from the warehouse. Only two railroads—the Santa Fe and the Burlington—are as yet making use of this warehouse, although it is hoped that all may do so in time. The boat lines generally approve of this project. They would sooner have a common meeting place and interchange point with all the railroads than be required to move about from one dock house to another to put off and take on cargo. The railroads, however, are not so enthusiastic over the project. They have to pay the switching charge, which would be saved if the boats called at their own dock houses. They also argue that in times of congestion they may lose control of their cars if taken off their own lines. A further objection is that the railroads are put to less trouble and expense in loading and unloading cars at their own terminals than is the case where they make use of a common dock house.

"It would seem that the railroads would be more likely to enter into arrangements for the joint use of a common dock house if the plan were worked out under public direction, with railroad co-operation, instead of being launched as a strictly private undertaking.

"Duluth clearly has the best harbor on the lakes. After it would rank Buffalo. Such harbors as South Chicago, Cleveland and Milwaukee would constitute the next lower class. The Chicago harbor ranks below all these in point of excellence of facilities. Of course this was not always so. With reference to shipping needs of earlier days Chicago harbor was the equal of any on the lakes. But the harbor improvements have not kept pace with the progress of ship building, so that with reference to the needs of today our harbor facilities are antiquated and insufficient.

* * * * * * *

"The managers of the regular freight boat lines do not hesitate to say that they divert traffic from Chicago to Milwaukee where they can, because of the greater ease and economy of doing business in that port. A concrete illustration of the inadequacy of Chicago's water terminal facilities is furnished in the action of the International Harvester Co. in sending goods from Chicago to Milwaukee by rail to be loaded on the boat at that point for water shipment. During one week in August 65 carloads of machinery were thus sent out from the Deering plant located on the north branch. The explanation is that the difficulty of reaching the Deering plant by boat was too great to warrant the effort.

"It is not uncommon for the boats to deliver at Milwaukee carload consignments for Chicago, and have the delivery made by car from Milwaukee to Chicago. This is in cases where the receiving house in Chicago has a location on a switch track.

WATERWAYS AND TERMINALS.

"The federal government constructs or improves waterways. It does not supply terminal facilities. Those must be provided if they are to be had at all by private agencies or by state or local

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public authorities. The Hennepin canal, lately completed by the federal government at a cost of approximately $8,000,000, is unused, largely because of the absence of terminal facilities. On the west this canal opens into the Mississippi river, and hence through that outlet has access to river cities with dock facilities. But the eastern terminus is practically in open country and not at a point for traffic origin. Major Marshall long ago expressed the opinion that the Hennepin canal could never have much traffic until given direct connection with Chicago.

"Proper terminal facilities are quite as important for a transportation route, whether rail or water, as the connecting way between the terminals. A railroad line between New York and Chicago be it ever so good would have little value without terminal facilities in the two cities. Railroad expenditures for improvement at the present time are largely taking the form of giving better terminal facilities. The Pennsylvania railroad is spending an enormous amount, said to be in the neighborhood of $100,000,000—or as much as the state of New York is expending to secure a larger Erie canal across the state—in providing itself better facilities, both passenger and freight, for getting into and through New York City. The New York Central is spending $60,000,000 for passenger terminal improvements in New York City.

MONOPOLY CONTROL OF TERMINALS.

"Monopoly control of terminal facilities gives monopoly control of the transportation business between terminals. This is true of waterways, open to all on like terms, as well as of railways. Competition can have free play on a waterway only in case there is access to the terminal facilities by all boats on like terms.

"The railroads provide their own terminal facilities, assisted by the grant from the public for that purpose of the power of eminent domain. By analogy the boat lines are expected at first thought to do the same thing, though it is uncommon for them to be given condemnation powers to that end. In practice, however, the world over, boat lines do not as a rule provide their own terminal facilities.

"In continental Europe public ownership of docks is the prevailing custom. In Great Britain the harbor trust idea is the predominant one. In this country the dock facilities in first-class ports are provided either by the public authorities or by the railroads. They are not provided by the boat owners as a rule. There are important exceptions, of course. New York, New Orleans, and San Francisco have public ownership. About three-fifths of the water-front of Manhattan Island is publicly owned. Some of the large companies have their own docks, but more lease from the city. In Boston, Philadelphia, Baltimore, Newport News and Galveston the railroads own and control the important docks. Coming to the great lakes it is the same. The railroads control practically all of the terminal facilities of Buffalo, water as well as freight. In Duluth and Milwaukee it is the railroads that furnish the boat lines with dockage. This is partially true in Chicago also. While each boat line entering this city has its own terminal, a large part of the package freight is loaded and unloaded at dock houses provided by the western railroads.

HANDLING FACILITIES AT TERMINALS.

"Handling facilities at terminal points for the bulk commodities that constitute the heavy tonnage of lake commerce—iron ore, coal, grain, lumber and salt—may be provided by the private capital interested in the particular lines of business dealing with those commodities. But when it comes to the miscellaneous cargo, it would seem that satisfactory handling facilities are likely to be provided only by the public or by the railroads. And in Chicago's case it would seem doubtful if the railroads are likely to rise to the needs of the situation, chiefly because of their number and their inability to co-operate on a matter involving the general public welfare.

"Milwaukee's excellent terminal facilities for the package freight lines are provided by the Chicago, Milwaukee & St. Paul railroad. The latter part of the water-borne freight consigned to Milwaukee does not stop there, but is carried to its destination by rail. The interest of the railroad in providing terminal facilities for the water line is to get the rail haul. The interest of the St. Paul road in providing better dock facilities in Milwaukee than in Chicago, and in diverting water traffic from one point to the other, is two-fold. In the first place it can handle the business easier in Milwaukee because the congestion is less there than in Chicago. In the second place, the St. Paul road has but one important competitor in Milwaukee—the Chicago & Northwestern railroad. Water traffic in that port must be divided only between the two roads, whereas the competitors for it in Chicago will be more numerous. It is much the same with roads to other outlets where the competitors are fewer. The Santa Fe, for example, has an interest in diverting business to Galveston, because it has to compete with fewer rivals for the haul from that point to and from the central west.

CHICAGO A RAILROAD CENTER.

"If Chicago had but one or two railroads dominating the traffic situation at this point it might expect the railroads from self interest to develop facilities for connecting water lines. But because it is the great center for many rival railroad interests this city cannot expect any one of these railroads to do for it what the St. Paul road has done for Milwaukee, nor is it likely that all can be induced to co-operate to the same end, at least not without the initiative and directing supervision of the public authorities.

"The problem of providing adequate water terminal facilities at Chicago, therefore, must be regarded as one calling for solution by the public authorities.

"There are different views as to the importance of harbor improvements for Chicago. There are those who contend that this city has little to gain from spending any money on water development; that the railroads can perform the service better and at not much if any greater cost. It is significant that some persons who have followed the business of water transportation all their lives believe that inland water carriage is doomed to be driven out by the railroad.

"The general case of the railroads versus inland water transportation presents too large a field for discussion here. The advocates of water transportation make two chief contentions. They say: (1) That primitive waterway development cannot be expected to compete successfully with modern railroads; that waterways, to be effective, must be promoted on a larger scale. (2) That the railroads have deliberately throttled water transportation.

"Of course the great lakes are not to be likened to primitive waterways, whatever may be said of the present canals connecting them with the seaboard. Chicago's supremacy is due to the fact that it is the world's greatest railroad center and the railroad centralization at this point would seem to be due in turn to the city's strategic location with reference to lake transportation. Deprive Chicago of its advantages with reference to

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water carriage and there would be danger of inland centers approaching it in importance. The rail rate from New York to Chicago, which is the basing rate for adjoining territory, is influenced by the water rates, and is lower than the rail rates to points not on the water. The Interstate Commerce Commission, in regulating rates, recognizes the principle that cities enjoying water competition are entitled to lower rail rates than points not so advantageously located.

RAIL AND WATER RATES.

"Now, the balance between rail and water rates at Chicago is so delicate that it does not take much to turn the scale one way or the other. Because of the fact that the water haul from Buffalo to Chicago is about 400 miles further than the rail haul, the cheapness of water as compared with rail carriage is not so marked in the case of Chicago as it is, for example, with Duluth. But while Duluth gets a larger comparative saving by the water haul, it does not offer the same inducements to the railroads. Let Chicago, through its failure to provide adequate harbor facilities, deprive itself of the benefit of water transportation, and it will soon see the railroads doing less to advance its interests, because the incentive to do so will be removed. As long as the water route is available, the railroads must be on the alert to serve Chicago well and cheaply. It is significant that the present movement for the general increase of railroad freight rates comes at a time when the railroads have the water rate situation between Chicago and New York well in hand, as will be shown later in this report.

"The point sought to be made here is that the improvement of water terminal facilities is of great importance, not only because of the traffic that can actually be handled, but even more as a means of stimulating the railroads to do their utmost for Chicago. Another consideration of weight is that the total freight handling capacity of the city is greatly increased over what would be the case if dependence were placed on rail facilities alone. Water transportation is more elastic than rail, and can expand more rapidly to meet the needs in periods of congestion. When the railroads are unable to do all the business because of its great volume, the vessels on the lakes will greatly facilitate the movement of goods of such ports as are equipped with adequate water terminal facilities.

"While it may be true that the future growth of water traffic cannot be predicted with mathematical accuracy and shown to be of such great volume as to warrant tremendous outlays at once for harbor improvement, it cannot be gainsaid that there is more business to be done by water in Chicago than can be handled properly with present facilities. The case would seem to be clear, therefore, for a comprehensive plan of harbor improvement to be carried out only so rapidly as may be necessary to keep the facilities all the time a little in advance of the actual needs of commerce.

"With respect to lines of lake commerce, Chicago's interest would seem to lie most in the direction of increasing the package freight or miscellaneous cargo business.

"Iron ore, which constitutes about one-half the total tonnage of lake commerce, is little seen in the Chicago harbor. Nor do we care for it there. The great blast furnaces do not belong in the center of the city. They are better located for all concerned where they are, at South Chicago, Indiana Harbor and Gary.

"Chicago is still the world's greatest lumber market, although the arrivals by water have greatly decreased. The water business is still of importance, however, and many lumbermen think the present volume of business may be maintained for a generation or more. At any rate, it is important that the city have facilities for handling such quantity of lumber as may continue to come here, even though no increase may be looked for, owing to the disappearance of the timber supply at points available for water transportation. The place where the lumber is wanted appears to be the Chicago river and not the Calumet. For the year 1907 Chicago received, in round numbers, 2,400,000,000 ft. of lumber, of which 400,000,000 ft., or one-sixth, came by water. Not many years ago the receipts of lumber by water greatly exceeded those by rail.

"The coal unloading facilities in the Chicago river are not as good as at other leading lake ports. Perhaps they are as good as are warranted by the condition of the harbor. River improvement might be expected to lead to the introduction of better unloading facilities. While the Calumet river may answer as a trans-shipping point, it cannot meet the needs of Chicago proper as a receiving point for coal for consumption in this city.

GRAIN ELEVATORS DECREASING.

"The number of grain elevators on the Chicago river is growing smaller. As elevators have been destroyed by fire or other cause they have not been rebuilt. The center of the wheat trade is moving westward and northward away from Chicago. This city, however, while it does not lead in wheat, is still the world's greatest grain market. The center of the corn supply is not likely to move away. Much of the grain storage of the city is on the Calumet river. Except for one consideration it might be a matter of indifference to the community at large whether the grain center be on one river or the other, apart from the question of preserving investments already made. That consideration has to do with the encouragement of the package freight business. While the total volume of freight east is greater than the volume west, more package freight moves west that east. The package boats, therefore, need grain cargoes east, in part at least. And as most of the package freight comes into the Chicago rather than the Calumet river, it is highly important that there be elevators in the Chicago harbor to supply the package boats with their return cargoes of grain. These boats would find it disadvantageous to be obliged always to go to South Chicago for grain, especially for partial cargoes, after unloading in the Chicago river. This constitutes an argument for encouraging at least a considerable number of grain elevators to stay in the Chicago harbor.

"Because iron ore, grain, coal and lumber constitute the principal volume by weight of lake commerce, it is assumed in some quarters that they alone are worthy of serious consideration. The package freight or miscellaneous cargo business, however, is of very great importance. The great dry goods and grocery houses of Chicago actually bring in enormous quantities of merchandise by water. The ability to do so constitutes the principal reason for the pre-eminence of this city as a wholesale and jobbing center. It is difficult to obtain precise information as to the volume and value of this traffic because facts of this nature are not freely given to the public by concerns engaged in keen competition with one another.

SUGGESTIONS FOR IMPROVEMENT.

"Interviews with vessel men and shippers disclose great variations in views as to the ultimate solution of Chicago's harbor problem. There is to some degree unanimity of sentiment with respect to the next steps in the line of improvement.

"Whatever the ultimate solution may be, it is evident that the Chicago river must continue to serve as the

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harbor for a number of years to come. Therefore it should be improved within moderate limits as speedily as possible. The sanitary district intends carrying to completion the work of widening the South branch to 200 ft., an improvement of great importance. It also intends replacing the center pier bridge at Twelfth street with a bascule bridge.

"In addition to this program all the remaining center pier bridges should be replaced by bascule bridges, especially those at Rush, Clark, Wells and Lake streets.

"The point of land projecting into the stream at the forks of the North and South branches and the main river should be condemned and dredged, thus creating a turning basin and giving more room for the movement of vessels. A plan for the improvement of the North branch should be outlined and executed in much the same way as the sanitary district devised and has partially executed the plan for South branch improvement. None of these things the sanitary district intends to do. Its work is to promote sanitation, not navigation. What the community needs now is to have the work of improving navigation entrusted to agencies that can lawfully make navigation the chief aim. This means that the next legislature should be prevailed upon to give the city financial power to go ahead with the desired improvements, and that they should be pushed thereafter in the interest of navigation, and not as mere incidents to sanitation.

PACKAGE FREIGHT BUSINESS.

"The managers of the boat lines engaged in the passenger business and in the combined passenger, package and fruit business on Lake Michigan are pretty generally of the opinion that the best thing that could be done to satisfy their needs would be to construct a few piers projecting into the lake north of the mouth of the river.

"The area in question is a little far removed from the business center, but on the whole it seems to be the best site available for the purpose. The council has already granted the Chicago Railways Co. a franchise for a street car line on Indiana street, extending the present line on that street to the lake front, and it is announced that the new line will be built next spring. If passenger piers should be built as suggested, the cars might be operated on to the piers, or at least to the pier entrance. Passengers would find it much more convenient to ride directly to the piers by street car, even if the distance be a little farther, than to continue the present arrangement under which car lines leave boat passengers in most instances several blocks from the dock.

"As the boats that do a combined passenger and package freight and fruit business desire to handle both classes of traffic at the same dock, it would be necessary to equip some of these piers to handle the package business. It should be the policy to have some open dockage where any boats, on compliance with prescribed regulations and the payment of specified charges, could take on or unload miscellaneous cargo. Such dockage facilities might be supplied in connection with the piers now under consideration.

FREIGHT SUBWAYS POSSIBILITIES.

"This location, it is true, is reached by only one freight railroad, the Northwestern, but lighterage and possible car ferriage, if necessary, could be utilized to facilitate the movement of goods. Freight subways are possibilities of the future. This location is farther removed from South Water street than the present fruit boat landings. But the congestion at the present docks is so great that the fruit men would be willing to go farther if they could thereby be provided with more ample facilities.

"No detailed engineering plans nor estimates of cost of the suggested piers have as yet been prepared. That should be done, and if the engineering report is favorable the project should be carried out as soon as possible. The facilities these piers would afford are very much needed.

"Most of those who declare themselves in opposition to an outer harbor for Chicago, meaning thereby a great lake front freight harbor, concede the desirability of passenger piers on the lake front.

"The two next steps in the line of harbor development would seem to be (1) river improvement, and (2) the construction of piers on the lake front north of the mouth of the river.

ULTIMATE SOLUTION OF THE PROBLEM.

"The ultimate solution of Chicago's harbor problem presents many difficulties. If I might venture an opinion on that proposition it would be that the solution cannot be definitely indicated at this juncture. Time and the trend of developments must serve as guides. The possibilities would seem to be four in number, as follows: (1) To depend upon the Chicago river to furnish adequate harbor facilities both for the present and the future; (2) to close the Chicago river for large shipping, utilize it for lighterage purposes only, and let the Calumet river serve as the harbor for the entire city. In this event the Sag cut-off connecting the Calumet with the sanitary district canal would serve as the northern outlet for the lakes-to-the-gulf waterway, if constructed; (3) to build a great harbor on the lake front; (4) to dig a navigable channel in the vicinity of Twenty-second street connecting Lake Michigan and the river and develop the harbor along the sanitary district canal.

"I do not believe the Chicago river, with its narrow and tortuous channel, its multitude of bridges and its current, all of which constitute permanent obstacles to navigation, can ever make anything better than a third-class harbor. Nor can such a channel be a satisfactory outlet for the lakes-to-the-gulf waterway. If Chicago wants a first-class harbor and waterway outlet it cannot place dependence on the river alone. Nor does it seem likely that such pier space as can be provided at the river mouth will suffice to meet for all time Chicago's needs in the line of water terminal facilities.

"As to the second plan, while Calumet development is to be favored, the Calumet river cannot satisfy the needs of Chicago proper for water terminal facilities. A railroad line to this city would not think of being satisfied with a terminal at South Chicago only. The terminal must reach the center of heaviest traffic. Water transportation to amount to much must take cognizance of the same principle. The water route, like the railroad, must have its terminal where the business is. A water route with a terminus at South Chicago cannot compete advantageously for Chicago traffic with railroads terminating near the center of the city.

LAKE FRONT PLAN.

"The lake front plan and the project for a harbor along the sanitary canal with a cut-off to the lake at Twenty-second street, both present striking advantages and serious difficulties. One involves taking the railroads to the harbor, and to a degree revolutionizing settled transportation if not industrial conditions. The other means taking the harbor to the railroads and to the industrial area. As to whether either is capable of practical realization, and as to which is preferable, are questions the decision of which must be influenced by time and future developments. Surveys and detailed

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study of the two plans by engineering experts must precede attempts to decide the question intelligently. Pending that decision, it is obvious that the right to use portions of the lake front in the future for harbor purposes should not be surrendered.

RAILROAD CONTROL OVER LAKE TRANSPORTATION.

"For the transportation of the bulk commodities that constitute the greater portion of the tonnage of lake commerce—iron ore, grain, coal and lumber—there is keen competition among the lake carriers. Under the stress of this competition rates for carrying the great bulk commodities have gone down markedly during the past 20 years. Despite these reductions in rates, it is the testimony of men familiar with conditions that the vessel business on the great lakes for a period of years past has been profitable.

"Chicago's great interest in lake transportation is that between this city and Buffalo. The traffic consists principally of grain and package freight east and coal and package freight west. The importance of the package freight business to Chicago has already been pointed out.

"Now the package freight business between Chicago and Buffalo is handled exclusively (with a single exception to be discussed later) by boat lines owned by railroad companies. Any vessel that is equipped for the service and can get the orders from the shipper may carry ore, grain, coal and lumber. That fact doubtless explains the reductions in rates on these commodities. But only boats owned by the railroads may engage in the package freight business between Chicago and Buffalo. If these two cities were both destination points for traffic, of course non-railroad vessels could not be excluded from competition. But Buffalo is not a destination point. It is a transfer station. Goods reaching Buffalo by lake must go east by rail or canal. Likewise, freight from the east reaching Chicago waterborne must be brought to Buffalo by rail or canal. The railroad makes with its own boat lines a through route and a joint rate from Chicago to the eastern destination, or vice versa. The local rail rate between Buffalo and the eastern destination is so high that little would be left the independent boat for its lake haul after paying the local rate for the rail haul. Moreover, the railroad would not give the independent boat the benefit of its dock facilities in Buffalo, either for discharging or taking on cargo. The independent boat would be required to unload at some other dock and team the goods to the receiving station of the railroad. To make matters still worse, the railroads own nearly all the water front property in Buffalo available for dock purposes. Much of it lies idle and unimproved. The deliberate intent of the railroads to dominate the lake traffic situation through the control of the Buffalo water front can hardly be mistaken.

WHAT ABOUT THE ERIE CANAL.

"But, it will be asked, What about the Erie canal? The railroads dominate that, too, so far as possibilities of through traffic are concerned. Besides, the canal is so small and the number of boats operating on it is so few as to dwarf its importance. A few years ago the boats on the canal numbered four or five thousand. Today there are scarcely more than 350 or 400 serviceable boats in operation. It is hardly to be expected that many new boats will be put in service until the enlarged canal is ready for use.

"At best the methods of Erie canal business are primitive. The boat owners are for the most part men of narrow outlook. The business has not been organized along modern lines. Until recently, the legal limit of capitalization for companies engaged in the canal business was $50,000. The limit is now $4,000,000.

"The principal business of the canal boats is carrying grain east. Such through canal and lake service for package freight business as exists is supplied by the lake lines chartering canal boats and making rates to the shipper for the through service. In that way the lake lines, which are owned by the railroads that are supposed to be competitors of the canal, control the Erie canal service that is of interest to the Chicago shipper.

"The canal boat owners, with a few exceptions, are organized into a union. The claim is made—and there is much evidence to support the claim—that the boatmen's union acts in harmony with the railroads and refuses to have business dealings with independent lake boats that may seek to give a through lake and canal service in competition with the rail-owned lake lines.

SIGNIFICANCE OF LINE CONTROL.

"The foregoing indicates how the railroads east of Buffalo practically control the package freight business between the seaboard and Chicago and other western lake ports.

"Now as to the significance of that control.

"The lake lines operating between Chicago and Buffalo are as follows: Erie & Western Transportation Co. (Anchor Line), owned by the Pennsylvania railroad; Western Transit Co., owned by the New York Central; Lehigh Valley Transportation Co., owned by the Lehigh Valley railroad; Union Steamboat Co., owned by the Erie railroad. The Baltimore & Ohio and the Delaware, Lackawanna & Western railroads also maintain a lake and rail service, but do not own their own boats. The Western Transit Co. supplies the boat service for the Lackawanna road, and the Union Steamboat line furnishes that for the Baltimore & Ohio. The Mutual Transit Co., owned jointly by four railroads (Lehigh Valley, Delaware, Lackawanna & Western, Erie, and New York Central), operates between Lake Erie and Duluth, but sends no boats to Chicago. The foregoing are known as the Standard lake lines. In addition, there are two differential lines, that is, lines that maintain somewhat lower rates because of their roundabout routes and slower service. The Canada Atlantic Transit Co. is a Canadian concern, owned by the Grand Trunk railroad. It operates boats between Chicago and Depot Harbor, in Georgian bay. The other differential line, the Rutland Transit Co., now controlled by the New York Central railroad, is the lake connection of the Central Vermont railroad. The boats of this line operate through the Welland canal and Lake Ontario and make their terminus at Ogdensburg, N. Y. The Chicago & Duluth Transportation Co., operating between Chicago & Duluth, carrying iron ore one way and package freight the other, is independent of railroad control, but is accorded railway connections at both ports which neither it nor any other independent boat line could secure at Buffalo.

"The present rates, in cents per 100 pounds, by classes, all rail, from New York to Chicago, are as follows:

1	2	3	4	5	6
75	65	50	35	30	25

"The foregoing have been the published all rail rates without change for the past 20 years. Rates have been increased, indirectly, by changes in classification, but as the lake and rail and all rail lines use the same classification, the lake and rail rates have been subject to like increases on this account.

"Prior to 1901 the standard lake

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and rail rates, New York to Chicago, were as follows:

1	2	3	4	5	6
54	47	37	27	23	20

"In 1901 these rates were raised, the increase being from 54 to 59 first-class, and other classes to correspond, and in 1907 there was another advance, bringing the first-class rate up to 62 cents. The 1907 raise was partially offset by the carriers, after being required to do so by the Interstate Commerce Commission, taking on certain insurance burdens which they had not borne before.

"The present lake and rail rates, New York to Chicago, are as follows:

1	2	3	4	5	6
62	54	41	30	25	21

"Canal and lake rates from New York to Chicago have also advanced. In 1892 these rates were as follows:

1	2	3	4	5	6
30	25	20	18	16	14

"At the present time the canal and lake rates, New York to Chicago, are as follows:

1	2	3	4	5	6
42	36	29	23	21	18

"In other words, while all rail rates from New York to Chicago have remained nominally constant for the past 20 years, lake and rail and canal and lake rates, under railroad control, have advanced markedly. The percentage of increase, on the first class, lake and rail, is approximately 15 per cent; canal and lake, 40 per cent. The canal and lake increases on the classes below the first are in the neighborhood of 30 per cent. These higher rates, together with the deteriorating service, explain why shipments by canal and lake are falling off. These increases of rates have taken place while competitive lake rates on the principal commodities of lake commerce have gone down. It would seem to be a natural conclusion that lake rates on package freight have been raised in the interest of the rail carriers that own package freight boat lines. And it is significant that the movement for a general increase of railroad freight rates comes at the time when railroad control over water transportation to the east, by both lake and canal, is most complete. It might be added that the commodity rates, as well as the classified rates, have been raised in many instances. The differential between the lake and rail and the all-rail rate on flour is now two cents a hundred pounds, where it used to be five cents. The differential on packing house products, like lard and cured meats, has been made so small that these products now move mostly by rail.

"The foregoing comparisons of water route rates are with the standard all-rail lines. The differential rail lines make rates that are very little higher than the present lake and rail rates.

(To be continued.)

PIG IRON SITUATION.

Specifications on finished material contracts, particularly steel rails and bars, have increased, but for the most part the market is dull. Reports of price concessions on plates, sheets and structural material are more frequently heard. The Carnegie Steel Co. has started the first of its 12 new open-hearth furnaces at the Ohio works, Youngstown, and will now be able to roll open-hearth rails. The Illinois Steel Co. will start its No. 1 mill at South Chicago in a few days, after a year's idleness. The rail mill at Gary will begin rolling next month. The pig iron market is dull in all parts of the country, and some middlemen are selling at lower prices. On the whole the outlook is not encouraging. The production of coke continues to exceed the demand, and some very low prices for prompt delivery are being made. The old material market is dull and weak.

M'ARTHUR PORTABLE FIRE ESCAPE.

The McArthur Portable Fire Escape Co. is recently in receipt of a letter from F. W. Fitzpatrick, consulting architect and executive officer of the International Society of State and Municipal Building Commissioners and Inspectors, Washington, D. C., endorsing the portable fire escape as the best that he had ever seen. Its merits over the fixed fire escape are that it does not mar the building, can be kept in an inconspicuous place, is always ready for action, and can be carried to just where it is needed. Mr. Fitzpatrick says that the International Society is primarily concerned in endeavoring to get people to build fire proof buildings, but that there are already in existence nearly 12,000,000 buildings that should be provided with fire escapes. This portable fire escape is now being introduced on lake vessels.

The Skinner Ship Building & Dry Dock Co., Baltimore, Md., has been awarded the contract for repairing the lightship from the Tail of the Horseshoe Station, known as No. 46 The Skinner Co.'s bid was $474.64.

WHITE STAR LINER REPUBLIC SUNK.

As fuller details of the collision between the steamships Republic, of the White Star line, and Florida, of the Lloyd-Italiano line, the transfer in open boats of 1,650 passengers, the attempt to tow the disabled and sinking Republic to shoal water and her subsequent sinking, are brought to light they but emphasize the perfect discipline, the cool courage, and splendid seamanship displayed by the officers and crews of the colliding vessels and those engaged in rendering all the assistance possible under the circumstances.

Captain Sealby, of the Republic, was on the bridge of his vessel when the collision took place, and for over 40 hours he remained at his post issuing orders in the successful attempt to save the lives of his passengers and crew and the unsuccessful attempt to save his ship. Captain Sealby was still at his post on the Republic when the unfortunate vessel took her last plunge, as was also his chief officer, J. Cowland, both being picked up later by the boats. Captain Ruspini, of the Florida, was likewise on the bridge of his vessel when she rammed the Republic, and on the bridge he remained while the passengers of the White Star liner were transferred to his badly crippled craft, and, later, transferred with the passengers of the Italian steamer to the Baltic. He was still at his post when the Florida, considerably "down by the head" crept into South Brooklyn under her own power.

When it is considered that the work of transferring the passengers was carried through in a thick fog and by searchlight, that the ten lifeboats had to operate for about 12 hours in a rolling sea and that the boats had capacity for only ten passengers in addition to the crew each trip, the performance is all the more remarkable. Through it all there was but little excitement, the women and children, so far as the crews of the vessels were concerned, receiving all possible consideration first, last, and all the time.

To the officers and men of the Republic's engine department great credit is also due. Immediately after the vessels struck and the water-tight bulkhead doors had been closed the work of drawing the fires in the boiler rooms was commenced. The sea was pouring through the rent in the ship's side while this was being carried out, but it was not until the last fire was drawn, until such other

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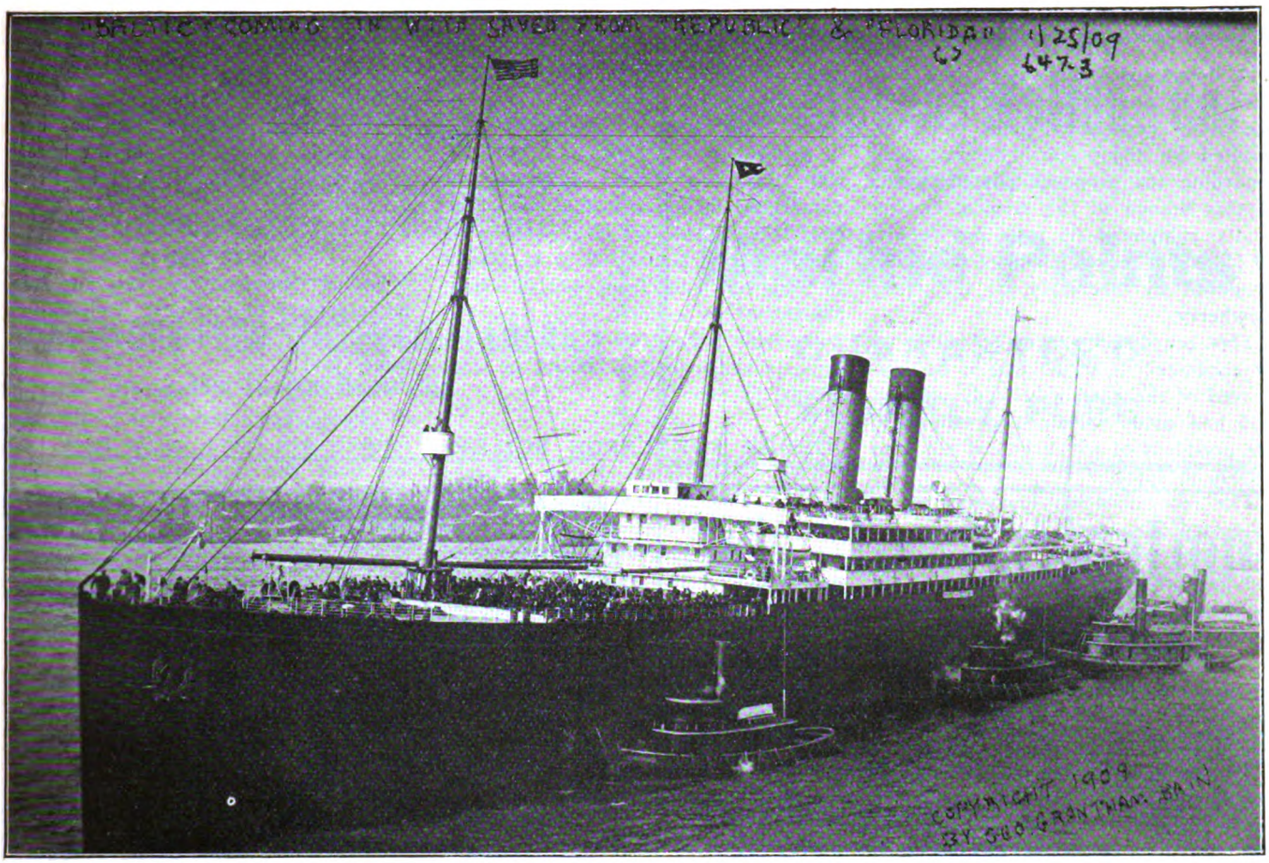

THE BALTIC REACHING PORT WITH THE RESCUED PASSENGERS FROM THE REPUBLIC AND THE FLORIDA ABOARD.

services as were necessary for the safety of the ship were performed, and the boiler rooms were flooded to a depth of over 3 ft., that the engineers and firemen climbed the ladders to the deck.

Never, since the first installation of a Marconi wireless system of telegraphy aboard ship, has the value of the system been so efficiently demonstrated or its usefulness appreciated as on this occasion. The Republic, in addition, was fortunate in carrying an operator possessed with an unusual amount of courage and energy, combined with a strong sense of what might be expected of him. From the striking of the vessels until the power died out of his storage batteries J. W. Binns, the operator, never once left his instruments. Messages were continually going forth to the shore stations and passing between the Republic and the vessels "standing by" to assist the doomed liner. It was the Marconi apparatus that sent forth the call for help, bringing vessels over 100 miles of water to render assistance.

The Republic left New York on Friday, bound for Mediterranean ports. She carried 211 first class passengers on a tour through southern Europe, 250 steerage passengers, and supplies for the United States battleship fleet, in addition to freight. At 8:30 p. m., Sunday, she was slowly returning to the mainland in tow of the revenue cutter Gresham and the derelict destroyer Seneca, the liner Furnessia being fast astern for steering purposes. The picked crew had earlier in the evening been ordered aboard the Gresham by Captain Sealby, who remained behind with his chief officer. While the searchlight of the Gresham was kept on the Republic it was seen that she was settling by the stern, and at 8:40 she disappeared.

No losing fight could have been braver than that made by Captain Sealby in trying to save his vessel. That he refused to recognize the fact that circumstances were against him makes his endeavor all the more commendable. The conduct of the officers and crew throughout was splendid, and no person contemplating a trans-Atlantic voyage need hesitate at placing his life in the hands of such as manned the White Star liner Republic.

The steamer building for R. P. Ranney, of Cleveland, at the yard of the Toledo Ship Building Co., will be launched March 10.

MERCHANT MARINE BILL

The Illinois Manufacturers' Association in session at Chicago, Jan. 22, went on record in favor of the passage by congress of legislation now pending for the development of a larger American merchant marine. The action was taken at a luncheon given at the Auditorium hotel, following addresses by John Barrett, director of the bureau of international republics, and James T. McCleary, of Minnesota, former assistant postmaster general.

The resolutions adopted declared that without a larger American commercial fleet the Panama canal will be only a subsidy to foreign vessels, which in time of war may prove dangerous as an auxiliary to foreign navies.

Mr. Barrett asserted that the United States was losing billions in South American and oriental trade by neglecting the development of its merchant marine, and Mr. McCleary declared the country's postal profits should be applied to shipbuilding.

Mr. McCleary also declared that while American citizens were applauding the spectacle of the battle ship fleet cruising around the world the country was the laughing stock of the old world's naval officials because the American fleet was accompanied by a convoy of foreign auxiliary vessels.

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APPROVE OF NEWBERRY'S PLAN.

A board made up of persons who have been prominently identified with the navy department who were appointed for the purpose of conferring regarding the proposed reorganization of this branch of the service, has recently completed its task and reported favorably on the changes made and proposed by Secretary of the Navy Newberry.

This board did not make public its proceedings but stated that it had approved of the changes already effected and had made certain suggestions to the president of which he did not then choose to speak.

The reorganization measures which Secretary Newberry has in view include the increase of membership of the general board of the navy and of the board of construction and repair, making them more thoroughly representative of the naval service than is now the case and a plan to secure more complete co-ordination than was possible under the old system.

Secrtary Newberry has also contemplated the probable merger of the bureau of construction and repair with the bureau of steam engineering, thus avoiding to some extent duplication and unnecessary work, as the interests of the two bureaus are closely related in ship construction. It was for the purpose of overcoming this difficulty that Secretary Newberry assigned Admiral Washington L. Capps at the head of the bureau of construction and repair, to act in the same capacity for the bureau of steam engineering.

DECREASED ATLANTIC COMMERCE.

The foreign commerce of the United States decreased during the year 1908, as compared with the year 1907, by approximately $500,000 000, according to the report issued recently by the department of commerce and labor at Washington.

A noteworthy feature of the report is the showing made by Atlantic ports, at which a falling off of $400,000,000 in the value of imports and exports is shown to have occurred.

The imports of the Atlantic ports in the calendar year 1907 were $1,107,000,000, while the exports were $1,156,000,000, as compared with an approximate import total in 1908 of $860,000,000, and an estimated export total of $1,050,000,000.

New York port imports fell from $777,000,000 during the first 11 months of 1907 to $582,000,000 during that period of 1908, while its exports fell from $617,000,000 to $578,000,000. Correspondingly, Boston fell in imports from $116,000,000 to $81,000,000 and in exports from $95,000,000 to $76,000,000; Baltimore from $34,000,000 to $22,000,000 in imports and from $90,000,000 to $70,000,000 in exports; Philadelphia from $76,000,000 to $52,000,000 in imports, and from $99,000,000 to $88,000,000 in exports, and New Orleans from $42,000,000 to $37,000,000 in imports and from $137,000,000 to $131,000,000 in exports.

ORDER FOR LARGE BOILER.

The Commercial Boiler Works, Messrs. Fox & Jenkins, proprietors, Seattle, have received an order for one of the largest marine boilers ever built on the Pacific coast. The boiler will develop 1,100 horsepower and will be 16 ft. in diameter by 11 ft., 8 in. long. It will be of the Scotch marine type and is to be installed in the British tug Lorne, owned by the Puget Sound Tug Boat Co., Seattle. The boiler will be completed within 60 days after the receipt of the material.

PERSONAL.

William C. Ennis, formerly superintendent of motive power and master mechanic of various railways, of late connected with the American Locomotive Co., and now located at 543 Broadway, Paterson, N. J., has been appointed by the Falls Hollow Staybolt Co. as eastern traveling representative.

Edward M. Cherry, son of the late P. L. Cherry, has been appointed British vice consul, Lloyd's agent, agent for the San Francisco Board of Marine Underwriters and for three German underwriting associations at Astoria, Ore. Mr. Cherry was for many years associated with his father at Astoria and is one of the best known young men in shipping circles on the Pacific coast.

The Chicago Nautical School, Masonic Temple, Chicago, W. J. Wilson, principal, has the largest class in the history of the school this winter. The school has a class of 28 engineers this winter with additional entries weekly. It has a class of 15 officers of the naval reserve and last week organized a class of 25 yachtsmen and power boat owners.

Mr. Robert Curr, who has been in the east for several weeks investigating floating derricks for the Victor R. Browning Co., has returned to Cleveland. Mr. Curr made a complete study while in the coast cities of all work involving floating machinery.

Rear Admiral Washington L. Capps, chief constructor of the navy, has been appointed as acting chief of the bureau of steam engineering as well by President Roosevelt.

OBITUARY.

Joshua Rhodes, the veteran steel manufacturer of Pittsburg, well known in the great lakes district, died at his home Jan. 5.

Capt. Albion A. Shepard died at El Paso, Tex., last week. He was formerly well known on the lakes, having built the steamers, Fred Kelley and Mary Jarecki and the barges M. R. Warner and Bessie Smith in the 70's.

J. A. Cuttle, managing director of the Montreal Transportation Co., Montreal, Que., died on a train near San Francisco, Cal., Dec. 20. Mr. Cuttle was for many years a prominent figure in Canadian inland waterway circles and was a member of both the Montreal corn exchange and board of trade.

Capt. William S. Batchelor, aged 60, a widely known marine engineer and an active worker for the improvement of the inland waterways of the country, died at his home at Monaca recently. From boyhood until a few years ago he had charge of river craft on either the Ohio or Mississippi, and was widely known at every river port between Pittsburg and New Orleans. Capt. Batchelor was a member of the Dravo Waterways Improvement Association of Beaver county, and suggested the name for that association. He served several times as a representative at "On-to-Cairo" conventions, and recently was appointed a delegate by Col. John A. Vance, of Columbus, O., to represent Beaver county before the rivers and harbors committee at Washington, D. C.

(Continued from page 19).

pulling steamer Yale down river at Buffalo; fireman drowned; tug raised.

Dec. ..—Str. Vivian, owned by Morris M. Wheeler, Messena, N. Y.; sank at Waddington.

Dec. 21—Tug American Eagle, owned by L. S. Sullivan, Toledo, O.; burned to water's edge in Toledo harbor.

Dec. 22—Car ferry International, owned by Pere Marquette railroad, Ludington, Mich.; collided with sand sucker McKerchey in St. Clair river; not injured.

Dec. 22—Tug Thomas Fryant; burned to water's edge while tied up at the dock at Sault Ste. Marie, Mich., for the winter.

Dec. 23—Sand sucker McKerchey, owned by John M. McKerchey, Detroit; collided with car ferry International in St. Clair river; port bow stove in.

Dec. 30—Car ferry Pere Marquette No. 17, owned by Pere Marquette railroad, Ludington, Mich.; ran ashore in thick fog and stormy weather near Big Point Au Sable, Lake Huron.

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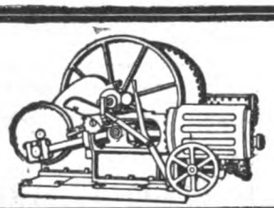
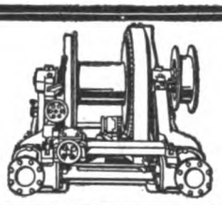
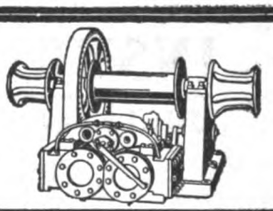

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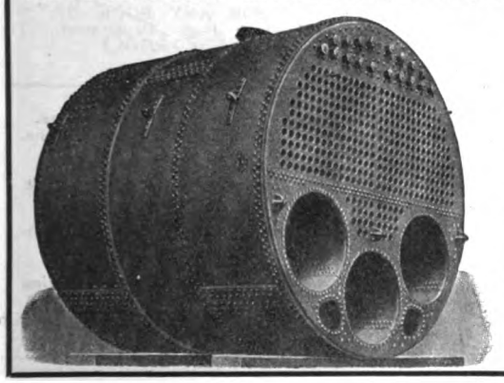

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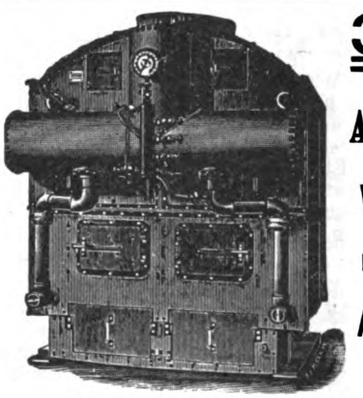

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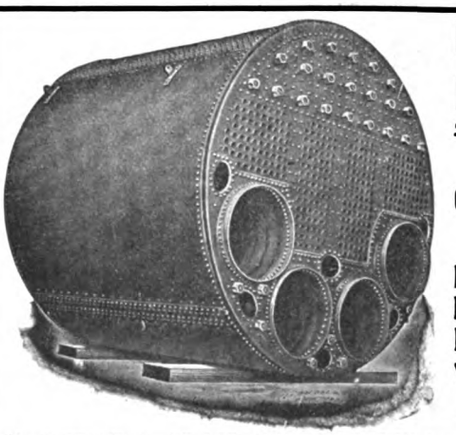

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PROPOSALS.—Sale of U. S. S. *Inca.*—Sealed proposals will be received at the Navy Department until noon on the 10th day of February, 1909, at which time and place they will be opened, for the purchase of the U. S. S. *Inca,* appraised value, $5,300. The vessel will be sold for cash to the person or persons or corporation or corporations offering the highest price therefor above the appraised value thereof. *Proposals must be submitted in a sealed envelope addressed to the Secretary of the Navy, Washington, D. C., endorsed "Proposals for the purchase of the U. S. S. Inca," and each proposal must be accompanied by a satisfactory certified check for not less than 10 per cent of the amount of the offer.* On application to the Navy Department forms of bids and bonds, together with the terms and conditions of sale, also a printed list giving general information concerning the vessel, will be furnished. The vessel can be examined at any time after the date hereof by applying to the commandant of the Navy Yard, Boston, Mass. It must be removed from the limits of the navy yard within such reasonable time as may be fixed by the Department. The Department reserves the right to withdraw the vessel from sale and to reject any or all bids. H. L. SATTERLEE, *Acting Secretary of the Navy.* 1-7-09

U. S. Engr. Office, Boston, Mass., Jan. 6, 1909. *To whom it may concern:* Whereas navigation is obstructed and endangered by wrecks of steamers "Germania" and "Reindeer;" canal boats "Geo. D. Cull," "John R. Myers," "North Star," "E. D. Case," "Richmond," "William Parker," "F. J. Bailey," "Governor Roosevelt," "Georgie T." and "Armenia Allore," and by hulks of eight (8) other canal boats, names unknown, in the narrows of Lake Champlain, New York and Vermont: Notice is hereby given that unless otherwise removed within thirty days, they will be removed by the United States under authority of law. Sealed proposals for their removal will be received here until 12 M., Feb. 6, 1909, and then publicly opened. Information on application. Edw. Burr, Lieut. Col., Engrs.

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U. S. Engineer Office, Milwaukee, Wis., January 14, 1909. Sealed proposals for building reinforced concrete caissons and pile pier, removing old pier and dredging at Milwaukee Harbor, Wis., will be received here until 2 P. M., February 12, 1909, and then publicly opened. Information on application. W. V. Judson, Major, Engrs.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., January 18, 1909. Sealed proposals for repair of South Pier at Frankfort, Mich., will be received here until 3 P. M., February 16, 1909, and then publicly opened. Information on application. M. B. Adams, Col., Engrs.

FREIGHT AND PASSENGER steamer for sale, 500 gross tons. Allow 600 excursionists. Will sleep 75 night passengers. Address Box 123, the MARINE REVIEW, Cleveland, O.

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TUG ARTHUR JONES FOR Sale, 16 x 18, 140 pounds steam, hull recently rebuilt and all in good working order. E. M. Graves, 17 Commercial Bank Bldg., Cleveland, O.

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